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THE Finish Line



MORE ABOUT REFLECTORS—While there are fewer manufacturers of porcelain enameled reflectors than there are manufacturers in many of the other divisions of the porcelain enameling industry, this should not blind us to the fact that as a consumer of porcelain enamel, enameling metal and allied products the lighting field is extremely important.

Last month we painted a brief picture of the trend to fluorescent lighting and the accompanying competition that may be expected (in fact, competition that is already here) from other materials, particularly the organic finishes.

Produce the facts

Yes, *we* know the qualities of porcelain enameled metal and its superiority over competing materials as a light reflecting surface for the "long pull" — but — in a great many instances those who buy and use reflectors have not been similarly enlightened.

The term "reflection factor" may play a big part in reflector selling in the future. Organic finishes lay claims to a higher reflection factor than is normally attained with porcelain enamel. What our industry must prove to those who buy large quantities of reflectors is that they are buying "light" and that they are buying it not just for today or next year — but for long periods of time. The reflector that retains its "reflectance value" five, ten or fifteen years hence is certainly preferable to one that claims a slightly higher efficiency when new, but offers no proof of continued efficiency.

What the manufacturers think

We have no intention of speaking for the reflector manufacturers. We do know there are some who are

extremely loyal to porcelain enameled metal reflectors as a result of their long experience and the eminently satisfactory results they have had with this material compared with other competing materials.

There is another group of manufacturers with plants which have no facilities for porcelain enameling but do have organic finishing departments. It is entirely logical that the trend among these manufacturers would be to "sell" the "painted" reflectors.

It's "acceptance" that counts

Let's step into the reflector manufacturer's shoes. No matter how loyal a manufacturer may be to porcelain enamel, or how much confidence he may have in the superiority of porcelain enamel as a reflector finish, he considers it his business to satisfy current demand. He may have a perfect knowledge of the wearing qualities of porcelain enamel, its ability to *maintain* a high "reflection factor," its resistance to heat and corrosion and its easy cleaning and maintenance features — but — if the trend is to painted reflectors you will find this manufacturer going with the tide, and not against it.

It's high time the enameling industry assembles the facts to prove its points with both the reflector producers and large buyers *before* a larger slice of this valuable industry business slips through the open door.

If porcelain enamel is better for incandescent, it's better for fluorescent too — and it's conceded to be better for incandescent lighting.

Dana Chase

Editor and Publisher

Porcelain Enameling on Inland's New Alloy

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. . . Assures Highest Quality

Write for the
new
TI-NAMEL Bulletin!

Inland research has given the
porcelain enameling industry a new
alloy steel base—**TI-NAMEL**—which
eliminates the standard cobalt ground coat

Inland TI-NAMEL simplifies shop operations by its superior forming qualities, by the elimination of ground coat operations, and by the reduction of enamel shop re-operations, edging, and scrap. These factors make floor space more productive, increase output, and cut manufacturing costs, without any sacrifice of quality. Finished products made of Inland TI-NAMEL are fully equal to the best multi-coat ware and they have longer service life.

Pending patent applications on the new enameling process and product made thereby are owned jointly by Inland Steel Company and Titanium Alloy Manufacturing Company under trust agreement.

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INLAND TI-NAMEL

We BUILT a plant on a drawing board

and planned for greater production by "shrinking" an oversize plant

By *W. R. Mull* • SUPERINTENDENT, NEWARK STOVE COMPANY, NEWARK, OHIO

ILLUSTRATED WITH FINISHPHOTOS EXCLUSIVELY

finish

In recent months hundreds of manufacturers have been planning and preparing drawings for their plant revamp and modernization program for production of their postwar products. Newark Stove Company is one of this group which has a major reconversion and modernization job to do.

The majority of our buildings were built in the early 1900's with no general or detailed drawings which we could use in the present revamping program. To supplement the missing drawing information we have built a scale model of all buildings, including all of the various floors and have then placed these buildings in their proper location for use in our postwar planning. We also included in these scale models certain types of production facilities which have been used in the past and placed them in the proposed location for our postwar operation so that all plant men and executives could better visualize our modernization program. This was done for the practical purpose of eliminating any and all bottlenecks which would eventually jeopardize our production.

This model plant has proved invaluable in planning production short cuts, establishing full utilization of floor space and reducing the amount of plant area required to obtain the most economic operation.

Reduction in area

We can assume from information received that a large percentage of the manufacturing plants' postwar programs calls for an expansion of facilities. Newark Stove Company has the problem of reducing plant

space. Inasmuch as our plans call for a large production increase, our plans to reduce our plant area will require some explanation.

In making this explanation, a brief outline of the history of the plant will aid in the clarification of our story and will, no doubt, be of interest to a great many people who have been engaged in the manufacturing of stoves during a period of the last fifty years.

In the early '80s, Mr. Wehrle and Mr. Moser had the idea of a stove factory. Mr. Wehrle was the father of A. T. and W. W. Wehrle whose well-known association with the stove industry terminated in 1936. Previously, stoves had been manufactured in this vicinity. In fact, within 21 miles of the City of Newark, Maryland Township of Licking County, a deposit of a very poor grade of iron ore was mined and refined to make castings used in the production of stoves. The early thinking of Mr. Wehrle and Mr. Moser was that cast iron was the only logical base material which could be used to produce stoves.

The first building constructed on the present site north of the intersecting railroad tracks was a small foundry housing approximately eight moulders. As time passed and sales increased, the facilities were increased many times the original small foundry building. In looking at the plant layout with its many buildings and various floors, it will perhaps leave the impression that the expansion programs were controlled by the ground elevation on which the buildings were placed. This was not necessarily true. At that time there was not today's thinking as to what constitutes a modern plant. If we were to start today with the same ground

area and erect a modern plant as we think today, in 50 years it might appear as antiquated as the old plant did in 1941.

The expansion program was not completed as one project. It continued over a period of years, and since cast iron was the basic material used, the foundry alone was expanded to over 1,000 feet in length, employing approximately 1,000 moulders using loose patterns and wood follow boards and operating 7 cupolas.

The expansion program was planned very economically and reflected very successful operation on the products being manufactured until the depression in the early '30s.

Plant survey

By 1935 the serious question arose as to the advisability of continuing the plant using cast iron as a basic material or converting to the use of more sheet steel fabricated parts. This survey was made by a qualified group of industrial engineers and the result of their findings at that time was continued operation of the plant on a cast iron material basis.

During the year 1935, Sears, Roebuck and Company started negotiations for the purchase of the Wehrle Stove Company. Their requirements at that time indicated the necessity of a cast iron foundry and facilities for producing cast iron stoves and repair parts. The negotiations for the purchase of the plant were completed in early 1936.

The production of the cast iron stove continued through 1936 and 1937, and by 1938 it was easy to visualize that the trend of the cast iron stove market was literally making Newark Stove an orphan plant. Many things were planned and definite an-

alysis made—products were redesigned using sheet steel as a basic material instead of cast iron.

With the entrance of the United States into the war in 1941, our plans were shelved and we converted our facilities 100% to the manufacture of war materials. This type of production continued throughout 1944. However, in early 1943, recognizing that the war *would* end, our management in farsighted planning asked the question, "Is Newark the proper location geographically for a stove manufacturing plant, and can the existing facilities be rearranged to approach a modern plant, operating economically cost-wise and produce the quantities required by the Sears' Sales Division?"

By August 1943 the survey was completed, market research had been made, the study of the geographic location completed and the potentiality of a new modern plant compared with that of the present facilities revamped. The result of this detailed study were favorable to Newark as a location and a revamp of the existing facilities. This was extremely gratifying to all of us at the Newark Plant who had become attached to it and its employees with a family sort of a feeling that contributes so largely to the successful operation of any manufacturing plant.

Production pre-war and post-war

Using our 1941 production as a basis for all calculations, we propose to increase our production within five years postwar 73%. Our plans to reduce the *manufacturing* area in our plant 50% with a 73% increase in production will, no doubt, be the cause for many questions, all of which can not be answered in this short story.

Shrinking the plant

In shrinking the Newark Plant for economical operations, the remaining buildings will have full utility as a stove manufacturing plant. We have analyzed the revamped plant with regards to future production requirements and a completely modernized production arrangement of equipment for a practical straight line opera-

tion. This has resulted in shrinking our *manufacturing* space from 1,000,000 square feet to less than 500,000 square feet.

Back to the model plant

To obtain a better picture of material flow in the revamped plant, we refer to our miniature which has been used very successfully in our analysis.

With our redesigned product, using sheet steel as a basic material instead of cast iron, our material flow starts from the steel storage through shear and press department instead of from the foundry. Many changes were necessary in our layout to provide the proper flow and assure the most economical production results.

To provide this flow in our fabricating division we plan to dismantle a two story wood and brick building and build a one story steel and brick structure of approximately 29,000 square feet of floor space.

Fabrication

The new building will be utilized for steel storage, shear department and press room; one bay the full length of the building will provide steel storage for approximately 30 days' supply. Since our scheduling in normal times will be on the basis of a 30-day turnover on this material, we anticipate turning our stock 12 times per year.

The steel storage will be equipped with an overhead traveling crane which will be used for unloading, storing and transfer of steel from the storage to the shears, which will be located adjacent to the storage area.

Sufficient space is allotted between shears and large presses for approximately one week's supply of sheared material. However, in some instances stock will be sheared and started through the presses immediately to facilitate a straight line operation and eliminate excessive handling.

Our press shop will consist of approximately 60 presses, ranging from 20 tons to 400 tons, some of the larger presses having bed areas of 60" front to back and 120" right to left to facilitate multiple die setups reducing handling between operations, minimize trucking, storage be-

tween operations and a high investment in skids and transportation facilities.

Green stock storage and welding

As the material leaves the press shop, it will be placed in a green stock storage ahead of spot welding, painting or vitreous enamel operations.

In working from the green stock storage, materials to be welded before finishing will be started in process in the welding department three to four days ahead of assembly if paint finish is required; five to six days ahead of assembly if vitreous enamel finish is required.

Painting

Ware processing through our paint department will be bonderized ahead of painting and conveyed through a continuous paint drying oven to the store room on the assembly floor.

Enamel shop to be revamped

Our postwar enamel shop will be revamped to provide facilities in balance with the production setup throughout the rest of the plant.

Movement of ware to enamel shop

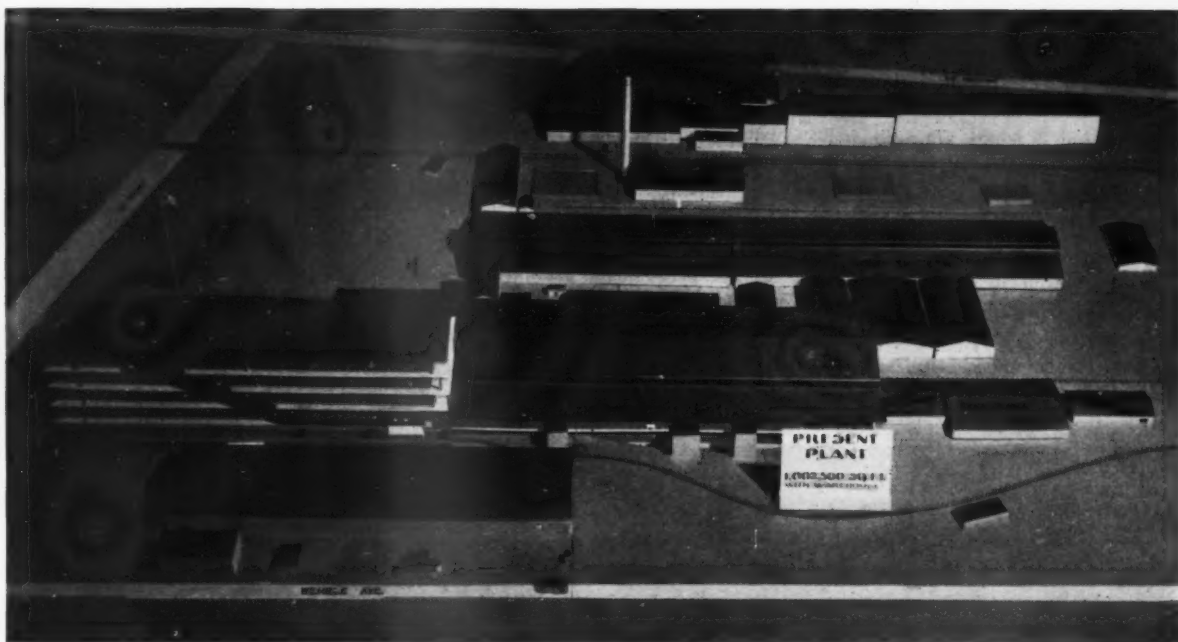
Ware requiring vitreous enamel finish will be transported to the enamel department either by conveyor chain or in box skids which are towed to the enamel department by the same conveyor chain. This chain will deliver the ware at the loading station of the automatic pickling machine.

Mill room

In revamping our mill room we are installing an electric hoist to be used in storing materials above the mills. We are adding one 5,000 lb. mill, two blunger mills to be used in mixing reclaimed enamel, mill unloading pumps, centrifugal equipment for screening enamel, magnetic separators and water treatment equipment. Adjacent to the mill room is our process control laboratory which will be in charge of a capable ceramic engineer who will handle all process control problems pertaining to the enamel shop.

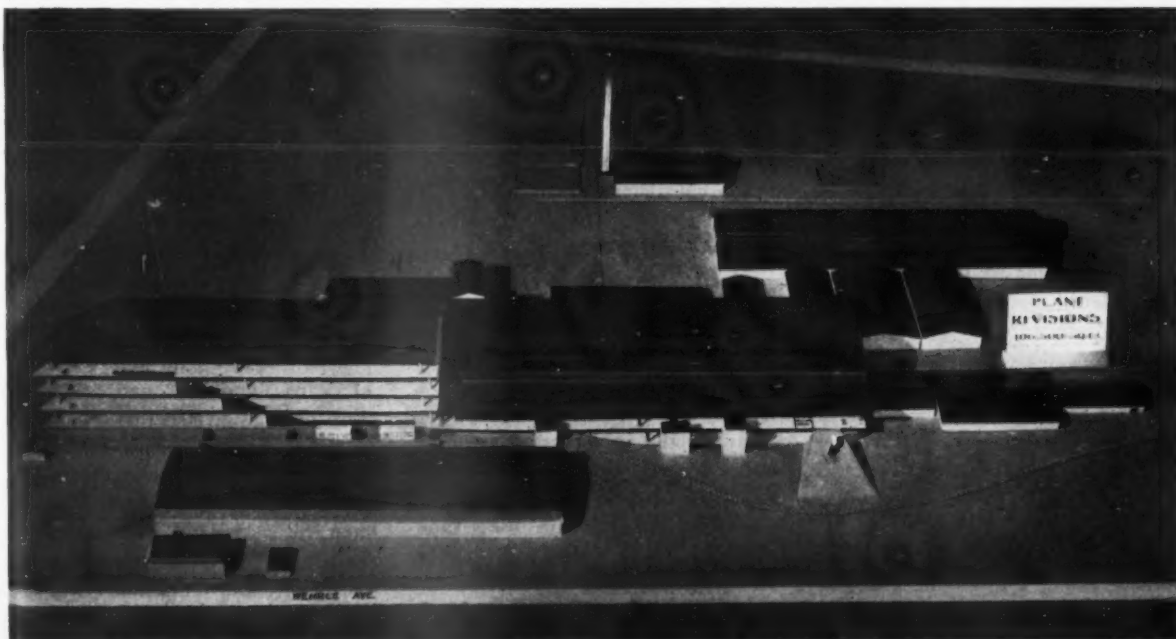
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OCTOBER • 1945 finish



This is an "air view" of the pre-war Newark Stove Co. plant (scale model). In this "plant on a drawing board" all details such as railroad sidings, power plant and water reservoirs (gray squares at upper center) are included. The building at left center is a cut-away view of the four-story warehouse. Compare this view with the one below to get a picture of the result of "shrinking the plant."

This view shows the new plant as it will appear when completed. Notice missing buildings (to be demolished) in the center of the area. The first building, on Wehrle Avenue, is the company office. The next building is the enamel shop. Center section, to the right of the warehouse, is a two-story structure, the first floor of which houses organic finishing. The second floor of this building carries the assembly lines, parts storage and receiving room.



Steel preparation room

In our prewar operation we had installed a continuous automatic pickling machine. This machine will be increased in length approximately 35' to accommodate the addition of nickel strike and neutralizer tanks. Due to the length of this machine, a double drive is being provided for a smoother movement of the chain and better load distribution.

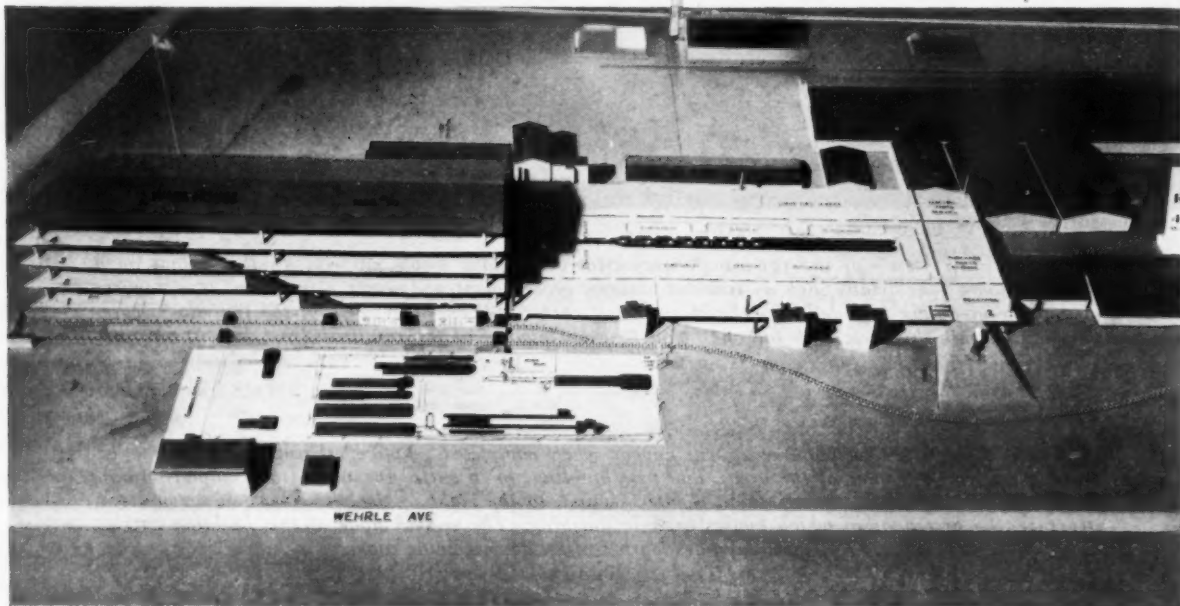
We are also installing filters for the nickel strike and neutralizer tanks along with liquid levels and temper-

ground coat spray line consisting of a 30' water wash spray booth, one 6' black edge spray booth and a 45' gas fired dryer. The location of this equipment has been carefully studied to eliminate all excessive handling and trucking. We are also providing 1380' of gravity conveyor and transfer cars which will be used as a storage between the ground coat and the finish coat operations, the ware being removed from the ground coat

4' wide. This conveyor will be separate from the conveyor which will carry the ware through a 45' gas fired dryer. Washers are being provided for the conveyor to prevent build-up of enamel materials. One spray booth is being provided for the application of acid resisting enamel which is applied to all main tops on our stoves. Two brushing tables will be installed, complete with exhaust units.

General

The entire enamel department will



This closeup view, with roof removed from the enamel shop and assembly floor, shows the details of equipment placement. The assembly floor may also be removed to show the first floor equipment detail in the center building. Notice details included, such as box cars on the siding adjoining warehouse, a white topped trailer truck on the ramp from the receiving room, and the white "stoves" on the assembly line.

ature controls for all tanks on this machine.

Ground coat application

A new ground coat furnace is being installed similar to the vacuum tube furnace we used in our prewar production. This furnace will naturally be of the most recent design incorporating all changes which have been found necessary, both from the operation of the furnace and cost and quality of ware processed through the furnace.

In connection with the ground coat furnace will be the ground coat dip tank line including two 6' water wash spray booths for black edging, a

furnace chain to the transfer cars on the gravity conveyor; hence, moved to the loading station for finish coat application.

Finish coat application

The finish coat application department will consist of a pressurized room equipped with gas heaters, blowers and automatic oil filters. The spray booths in this room will be water washed, down-draft type. All flat surface spraying will be performed with automatic spray gun units. Two water washed spray booths are being provided for edge spraying. The ware will be handled through this department on a 130' conveyor,

be cleaned and painted, new lights will be installed and a new sewer system installed to service the water washed spray booths and provide better facilities for good housekeeping.

Facilities are also being provided to control enamel thickness and color matching to insure the highest quality of ware obtainable and minimize ware damage through the remainder of the manufacturing process, transportation and field service.

The finished ware in the enamel shop will be transported to the stores department on the assembly floor by conveyor chain, this chain being the same chain that is used to convey

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Selecting a liquid metal cleaner

containing a "yardstick" for cleaners and a classification of "soil"

By Gilbert C. Close • LOS ANGELES CORRESPONDENT FOR FINISH

finish

A lot has been written and said about liquid metal cleaners. Too often, however, the cleaning solutions themselves are considered in the abstract, with the importance of their use being stressed rather than the qualities of a cleaner that will make it accomplish desired results.

In this conjunction it should be remembered that liquid metal cleaners include a considerable category of compounds, each designed to produce the same end-result, but each accomplishing such results in a different manner. A gun is designed to kill, but you don't use an elephant rifle on quail, nor would you tackle a twenty-ton tusker with a 12-gauge scatter gun.

The many liquid metal cleaners available and the multiplicity of claims made for each tends to create confusion in the mind of the finish engineer who is not acquainted with the basic chemical principles upon which such cleaners operate. Lacking this chemical knowledge, however, does not dim the finish engineer's conception of what a metal cleaner must accomplish — provision of a chemically clean surface on which to apply finishing materials, and accomplishment of this result at a reasonable unit cost.

A Yardstick for cleaning requirements

In the enameling industry, as well as in any industry engaged in the application of surface coating materials, a theoretical "yardstick" can be set up to gauge cleaning requirements and balance them against the properties of the various cleaning solutions available. Such a "yardstick"

will include all types of metal soil to be removed set opposite the chemical compounds that will cause such soil to enter, readily into liquid solution or suspension, or to break down chemically into water-soluble soaps via the saponification process.

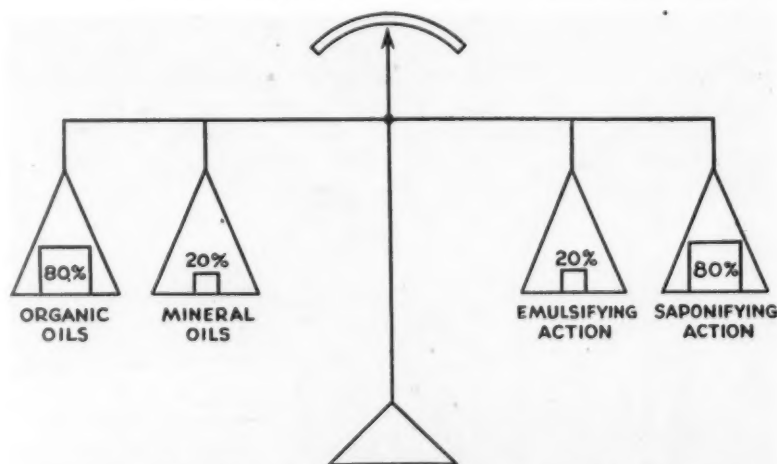
Determination of the types of soil to be removed is the first step in the inauguration of any cleaning program. The chemical composition of the dirt involved will determine the chemical composition of the solution employed to remove it. Furthermore, the physical characteristics of the dirt, such as its body, density and adherence to the metal surface, will determine the strength of solution required and necessary innovations in actual processing technique. Unless such factors are thoroughly in mind, and unless each is carefully balanced against cleaner properties, selection of a cleaner becomes as much of a gamble as the purchase of a lottery ticket.

Cleaning problems increase in direct proportion to the complexity of

the manufacturing process, and are often affected by the volume of manufacturing output. When welding is included in the manufacturing processes, the problem of metal cleaning prior to and after welding is added to those already in extant. Huge manufacturing output, necessitating large stocks of raw materials that must be protected during prolonged storage, tosses another problem into the cleaning department's lap. The fish oil so often used for protecting iron during prolonged storage is a difficult coating to remove.

"Headaches" from drawing compounds

The drawing compounds used in metal forming operations are another headache that directly concerns the cleaning department. Such drawing compounds, and especially those employed in deep-draw forming, exhibit considerable "body" and are often composed of several substances practically insoluble in most liquid cleaning solutions. The insoluble soaps of



A balanced liquid metal cleaner may be represented by the diagram. A definite ratio of soil types demands a definite ratio of cleaner action. Any alteration of cleaning action percentages will quickly unbalance the scale.

aluminum, zinc, calcium and lead exhibit high film strength and impart very good lubricating properties during forming operations, but subsequent removal is a difficult task.

In conjunction with drawing compounds, close cooperation between the design department, machine department and cleaning department should be maintained at all times. A slight change in design contour may permit use of a much lighter drawing compound, and machinists, over-inclined to prevent die gall and die wear, may tend to resort to heavier drawing compounds than are absolutely necessary. With each department fully conversant with the troubles besetting the others, it is possible to strike a happy medium and design, form and clean parts in a manner best suited to production of an acceptable product.

When the exact types of metal soil that must be removed have been determined, the next step is to select a cleaner of the correct chemical composition to handle all dirt in a single operation. ("All dirt" in this conjunction means any kind of dirt that can be effectively removed by a liquid cleaner, and does not include excessive heat treat scale, heavy rust, etc., which, under normal conditions, must be removed by an abrasive process

or in the pickling tank.) Selection of the proper cleaner implies a knowledge of cleaning chemistry sufficiently advanced to determine the types of chemical or physical action necessary to remove the soil involved.

Classifying the "soil"

The types of soil common to most manufacturing processes may be roughly classified under four categories: (1) the mineral oils; (2) the animal and vegetable oils; (3) combinations of animal and vegetable oils with mineral oils; and (4) insoluble matter either alone or in combination with one or more of the oils. Each soil product, or combination of soil products, will require a cleaner specifically balanced to the type and amount of each soil present.

At this point in the inauguration of a cleaning program, much trouble has been caused by relying too implicitly on the results of laboratory tests with several recommended cleaning compounds. Laboratory tests are very valuable for ascertaining certain cleaner features, or for checking cleaner concentration and purity after a period of use. But practical experience proves that it is next to impossible to duplicate actual production cleaning processes in the laboratory. Any cleaner worthy of con-

sideration merits actual trial under production line conditions.

The "mechanics" of cleaning

In many types of industry, mineral oils will be the most common metal soil encountered. Such oils are effectively removed by a process known to cleaning chemistry as "emulsification." Emulsification is a physical rather than a chemical action, wherein minute particles or globules of the mineral oil become suspended in the cleaning solution. Subsequent rinse washes the solution from the metal surfaces and the suspended particles of mineral oil are carried with it.

The vegetable and animal fats and oils present an entirely different problem. Such oils refuse to emulsify, and must be broken down by chemical action into water-soluble soaps. This breaking down action is commonly referred to as "saponification." The water-soluble soaps are then dissolved by the cleaning solution and freed from the metal surfaces during subsequent rinse.

When a combination of mineral oils and animal or vegetable oils are present, the solution must clean both by emulsification and saponification. Preponderance of either action will depend upon the ratio of oils present. If the major soil happens to be an animal oil, a predominantly emulsifying cleaner will be slow in action. The same holds true with conditions reversed. Closely supervised production runs, noting required cleaning time and results, and varying solution strength to improve both, is the best method to use in determining the optimum cleaning formula.

When it is desired to remove a certain amount of insoluble substances in the liquid cleaner, such as light heat treat scale or light rust, the method by which cleaning is accomplished is more important than actual cleaner composition. Hand scrubbing and use of the high-pressure washing machine are both effective in this conjunction. With either method it is the mechanical action that causes the insoluble matter to leave the metal surface and enter the solution. If one of the oils are present along with the insoluble matter, the solution should

The advantages of a modern, conveyORIZED cleaning department can only be fully realized through the use of cleaning solutions adapted to the type of work involved.

PHOTO COURTESY FREDERIC B. STEVENS, INC.



be balanced to emulsify or saponify according to the type of oil present.

The "types" of cleaners and their characteristics

When selecting a cleaner, it is convenient to be acquainted with the trade terms used to designate different types of cleaning action. Generally speaking, "light duty" cleaners clean by emulsification only. They are slow in action and should not be employed for cleaning iron and steel except when metal soil is slight and is of purely mineral oil composition. Their widest application is for cleaning aluminum and its alloys, and use in general maintenance cleaning work. They are non-caustic, and therefore harmless to the hands and clothing of cleaning personnel.

The "medium duty" cleaners clean both by emulsification and saponification. This is the most universally employed cleaner for general work. They are mildly caustic, and work very well on steels contaminated with mineral oils and a medium amount of animal or vegetable oils. The "heavy duty" cleaners are highly caustic, and clean almost entirely by saponification. They are used with the ferrous metals only, as they will attack and etch the lighter alloys. Care must be used in handling the heavy duty solutions as they are harmful to the flesh of cleaning personnel.

Important characteristics to look for

Despite the type of work it must perform, any cleaner selected must exhibit good wetting and free rinsing characteristics. Wetting qualities are extremely important when cleaning enameling iron, as water breaks on the surface of the metal will prevent the enamel slip from making complete coverage. This is very likely to result in bare spots, copperheads and poppers on the finished material.

The wetting characteristics of a cleaner is one property that can easily be determined in the laboratory. Another simple method is to toss a wad of steel wool on the surface of the cleaning tank. If the steel wool sinks quickly, it is a sure sign of good wetting characteristics.

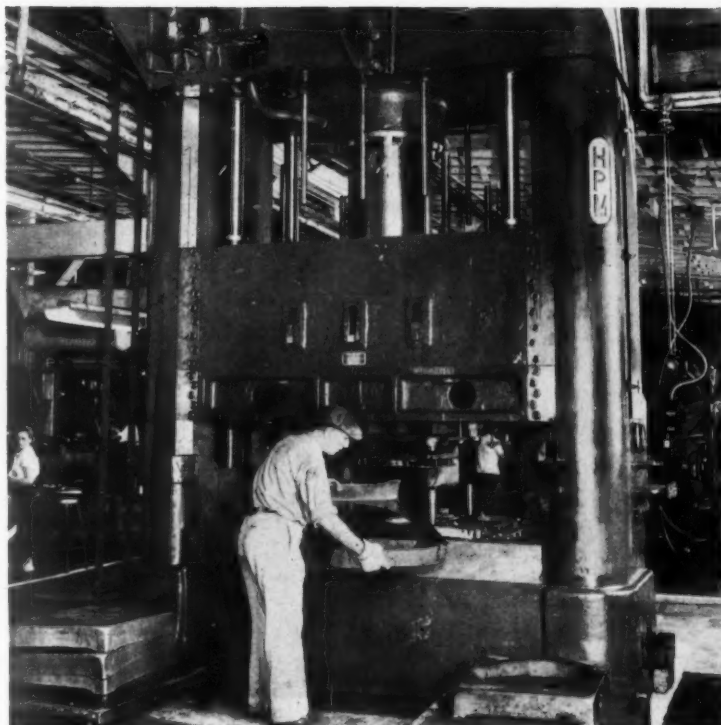


PHOTO COURTESY NEW MONARCH MACHINE & STAMPING CO.

Drawing compounds are important for the deep draws of which a press of this type is capable. "In conjunction with drawing compounds, close cooperation between the design department, machine department and cleaning department should be maintained."

Free rinsing qualities are also important, not only from the standpoint of clean iron, but to prevent contamination of subsequent solutions. The free rinsing qualities of a cleaner are largely dependent upon its composition. In this conjunction it is well to remember that certain ingredients that will expedite cleaning will detract from the free rinsing qualities of the solution.

Chemicals that will detract from the free rinsing quality of a cleaning solution when used in excessive amounts include rosin in the powdered form or in the form of a rosinate, sodium silicate of either the meta, sesqui, or ortho variety, high titer soaps, and various bentonite clays. Any of these chemicals will speed cleaning action, but this advantage will be more than offset by a reduction in free rinsing qualities. With this fact in mind, it behooves any finish engineer to regard with suspicion claims of excessive cleaning speed. When such claims are made, a careful investigation relative to the

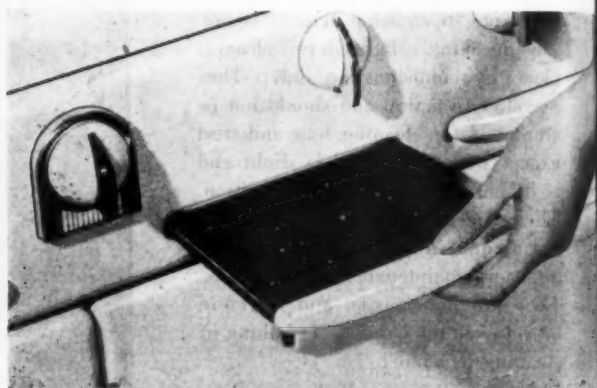
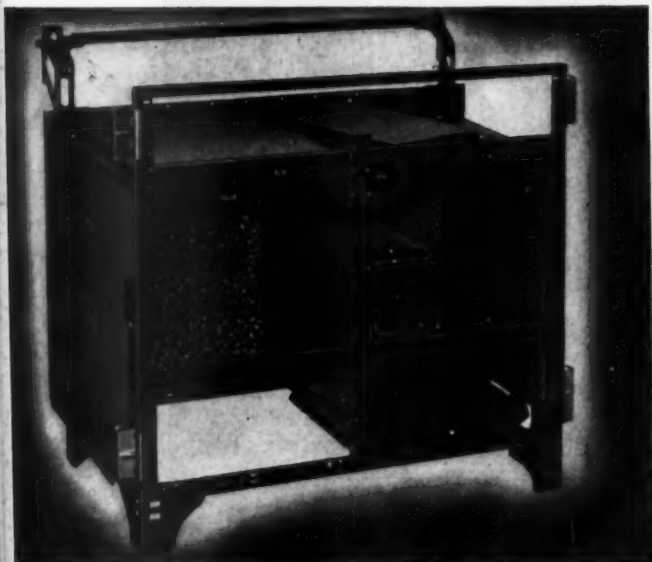
free rinsing qualities of the cleaner should be made.

The logical course is to regard metal cleaning as a highly complex process and treat it accordingly. This complexity is due to the many types of soil encountered, each requiring a specific chemical, physical or mechanical action in its removal. The well balanced cleaning solution will encounter each type of soil with the specific action demanded. Selection of a cleaning solution without a survey to establish cleaning requirements may be likened to purchasing a pair of shoes without trying them on. They're likely to pinch in spots.

This article is not intended as a short course in liquid metal cleaning. Its purpose has been to point out the importance of balancing the amount of cleaning chemicals in a cleaning solution to the types of work that must be performed, while at the same time maintaining other desirable cleaner properties. This is but a single factor in a composite cleaning set-up, but important to say the least.

Do you feature enameled range parts?

Roper does!



Burner Trays — enameled burner trays under top burners are protection in the event of "boil-overs."

Enameled Chassis—The well braced, rigid chassis of this range is forever protected from rust or corrosion by its porcelain enamel finish.



The Oven—The cleaning ease of a range oven, with all enamel surfaces and designed with rounded corners, means a lot to the homemaker who must keep it clean.

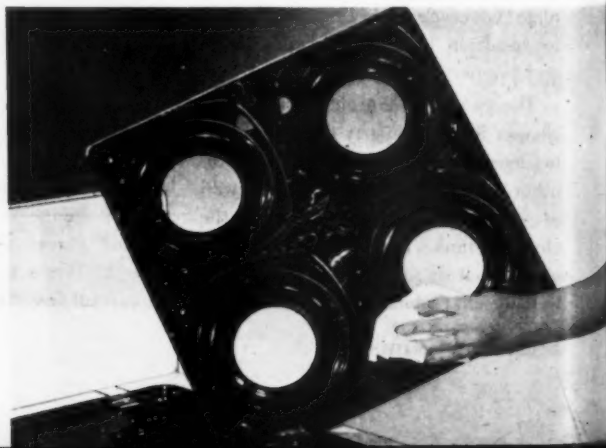
"Turret Top" — To the importance of an "easy-to-keep clean" surface is added the sparkling beauty that only porcelain enamel can offer on the range exterior.

ALL modern ranges have many porcelain enameled features which make excellent selling ammunition in appealing to the housewife who is responsible for their use and care. The question is: How many range manufacturers are making sales capital of what may appear to them to be points too obvious for special attention?

There is more selling appeal to modern housewives in one of these photos, illustrating beauty and cleanliness, than in all the fancy burners and "do gadgets" that can be built into a range.

These photos show how Geo. D. Roper Corp. "sells" porcelain enamel effectively. We are indebted to the company for their cooperation, in reproducing them here.

Cooking Top—This "Air-Stream" top protects other parts of the range and cleaning is no job at all.



Radiation pyrometry control in enameling

By *Joseph P. Vollrath* • INDUSTRY ENGINEER, BROWN INSTRUMENT COMPANY*, PHILADELPHIA, PA.

THE radiation pyrometer was introduced to the enameling trade shortly before the present war. War, while retarding its use in civilian goods processing, made it a must where it could speed output and improve the quality of essential material.

Case histories show that in some enameling plants improperly fired ware has been held to zero since introduction of the radiation pyrometer. Burners no longer had to refer to time factors in judging burning time. Atmospheric conditions were most often ignored, except in emergencies. Metal distortion was greatly eliminated. Oxide manufacturers regarded the use of radiation pyrometer control as a solution for many of their unsolved problems. Production has been speeded, rejects reduced and the general quality of the product has been increased.

In approaching the potential advantages of radiation pyrometry, one processor reported:

"We found that a burner set his time clock to make necessary allowances for five variable factors. These

were: Temperature of the furnace, gage and shape of ware, weight of tools, temperature of tools and the type of enamel. A man working on a furnace a year or more could provide fairly accurate answers for these variables; those of short experience were almost helpless. Even the highly skilled and experienced burner was subject to human failures.

"Imperfect ware ran average, but not abnormally high. Unfavorable results, such as fishscale, copperheads, off-color panels, reboil, warping, etc. were also studied."

Warping, in this and similar instances, was found to be the chief cause for enameling casualties. As a result, a laboratory study was made on deformation of enameling iron at different temperatures. This study showed that base iron sags very slightly at 1450° and increases gradually in sag up to 1630° to 1640°. At the latter point it reaches a high where it loses strength rapidly.

A second study was made. In this case the time factor on iron sagging indicated that in an accurately controlled temperature, iron sagged at

a fast rate the first few minutes, at a declining rate up to 20 minutes, and at a slow rate from 30 to 40 minutes. It was this latter study that determined the application of better temperature controls.

In the interval, before changeover of controls and the original studies, a questionnaire was submitted to various authorities. Their replies indicated: (1) Definite furnace temperatures and time elements were found necessary. None of the authorities knew the temperature required for a properly fired piece of ware; (2) it was agreed that time and furnace temperature, within certain limits, had little to do with proper burning; that at given temperatures the enamel "did mature."

The net result of these studies was the installation of radiation pyrometers with the following reported experience:

"The burners set the pyrometer at the proper temperature. They ran the load into the furnace, walked to the radiation pyrometer on the furnace door and aimed the instrument sighting tube at any convenient piece of ware. Furnace temperatures and time were forgotten unless a delay caused the furnace to be out of the usual burning range. When the ware reached the desired temperature, an alarm would automatically notify the op-

*Division of
Minneapolis-Honeywell Regulator Co.

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Radiation pyrometer mounted in the door of an oil-fired, box-type enameling furnace. This equipment has been used for both armor plate and porcelain enameling.

PHOTO COURTESY W. A. BARROWS
PORCELAIN ENAMEL CO.



ESTATE—Mary Riemer of Estate Stove Company's advertising department drawing names from a utensil held aloft by Jack Stivers, shipping department foreman, to determine the Estate Heatrola distributors to receive the first gas ranges to leave the assembly line.



WESTINGHOUSE—New automatic clothes dryer soon to roll from production lines at Westinghouse Electric Corp., Mansfield.—as a companion piece to the Laundromat, the company's automatic washing machine. The dryer contains a perforated metal basket for the damp clothes. The basket is rotated at slow speed while a fan circulates heated air to carry away the moisture.



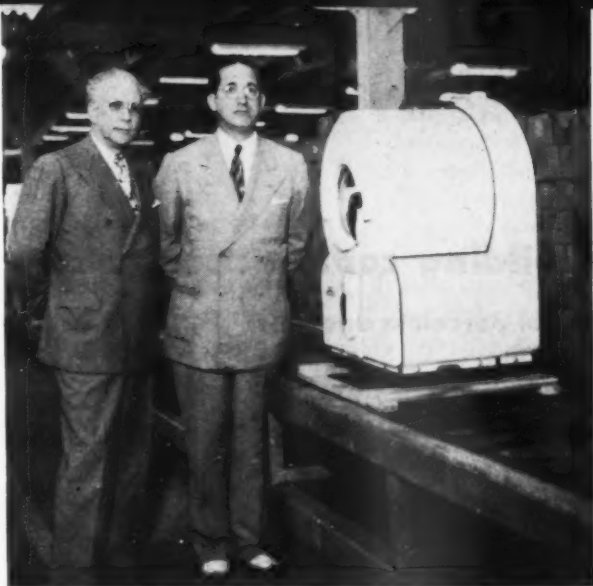
SEGER-SUNBEAM—Around the first Seeger-Sunbeam Corp. post-war refrigerator are: standing, John S. Holl, vice pres. and gen. mgr., St. Paul division; R. M. Reay, mgr. of commercial sales; and N. H. Griebenow, vice pres. and works mgr.; kneeling, L. K. Sosey, supt., and J. J. Leonard, vice pres. and sales mgr. Postwar manufacturing schedules call for a substantial increase above the 300,000 household cabinets produced in 1941.

Peacetime products

SINCE the last issue of *finish* was put to bed world stirring events have occurred. As a result the manufacturer of civilian appliances can forget the necessity for "sandwiching" allowable production of civilian products into continued production of war materials.

Peacetime products are rolling again, and granted that problems of pricing, raw materials and components can be solved without delay we may expect to see the greatest production of appliances and other porcelain enameled products of all kinds in the history of our industry.

Pictured on these pages are only a few of the new products that are and will be rolling from production lines.



BENDIX—J. S. Sayre (right), president of Bendix Home Appliances, and H. L. Spencer, vice president in charge of manufacturing, standing beside the first post-war Bendix automatic "washer." Production is now up to several carloads a day on this producer's line of automatic washers. Included in the line are "all porcelain" models.

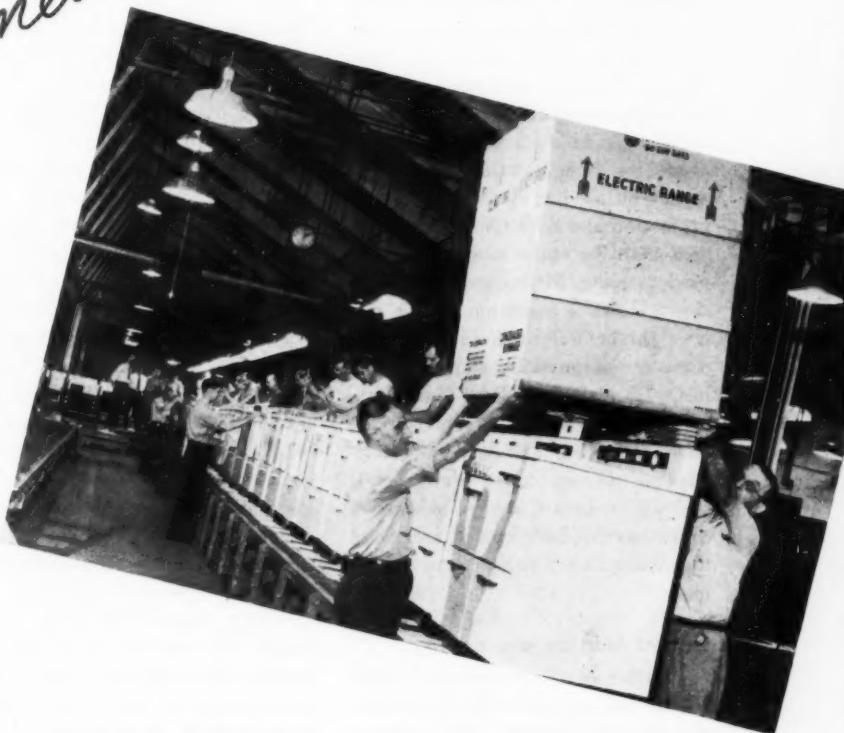


PHILCO—Walter H. Eichelberger, refrigeration div. sales mgr., W. Paul Jones, division vice pres., and Thomas A. Kennally, vice pres. in charge of sales, inspect the first post-war production model refrigerator of Philco Corp. The company is doubling pre-war production facilities.

*roll from
production lines*

They do represent typical examples of products we may expect to see on sales floors in the months to come. They also typify the speed with which American industry can "reverse itself" when once given the green light.

The enameling industry is moving as fast as labor and materials permit to prepare for a greatly accelerated demand for porcelain enameled ware of all kinds. Much has been done to expand, modernize and rehabilitate existing plants. Many new plants are in the process of building, and others will be started soon. This means that the industry as a whole will be in better position to serve producers and consumers of porcelain enameled products than at any time prior to the war.



HOTPOINT—Fully trimmed post-war electric ranges—all porcelain inside and out—are rolling off the production line at Edison General Electric (Hotpoint) company's plant. Serial numbers are above one million, indicating the start of the company's "second million" ranges. Company officials say retailers' stocks will be filled for consumer selections by early 1946. Dealers should have a display range in October.

Characteristics

of the postwar building construction market

an outline of the problems facing architectural porcelain enamel

Second of a series

By Charles P. Lohman • SALES MANAGER, PEMCO CORPORATION, BALTIMORE, MARYLAND



It is a foregone conclusion that postwar competition will be intense. No market is assured for the future just because it existed in the past. A great many products, some well known before the war and others developed during the war, are simply waiting for the time when they can be put on the market. Aluminum, glass, plastics and pressed wood, for example, have already received widespread publicity as future "musts" for both residential and non-residential structures of almost every conceivable kind. Several companies producing these materials spend more money on product development, sales promotion and advertising in a single year than the entire enamel industry used to make in the same length of time. Under a condition of this sort it might be well nigh impossible to compete on anything like an equal basis since the spending of such enormous sums of money can have the effect of forcing a demand almost regardless of comparative merit. Yet, if the will exists, there is a way to overcome this handicap of money so that out-industry competition can be met.

Control held by one group

Creating an ever-increasing demand for porcelain enamel as a building material would not be as difficult, nor as expensive, as it might seem at first thought. The principal reason for this fortunate condition is that, for years, the entire building construction industry has been dominated by one relatively small, uniform group. In fact, so potent is the influence of this

group, it is safe to say that no product can hope for complete success without its approval. While it is not possible to measure accurately the exact dimensions of the postwar building construction market, it is possible to gauge this group that will control it. It is composed of architects, architect-engineers, and a sprinkling of construction specialists and builders. According to a recent authoritative estimate, they number about 16,000 and work, with their associate specialists and draftsmen, in approximately 2,000 firms concentrated, for the most part, in the larger metropolitan areas. All told, their number probably does not exceed 18,000 — if indeed the total runs that high.

Records prove that, over the past 25 years, this man-market group either has controlled absolutely, or has influenced to a considerable extent, more than 85% of all building operations in this country. (*Of all operations started in 1943, for example, 97% were designed by architect-engineers.*) Present trends give no indication that there will be any change in this dependence of home owners, banks and realtors on architects in the years after the war. By the term "control" is meant those building construction projects which retain the services of a registered architect or architectural firm. While most owners go to an architect with preconceived ideas about the structure they have commissioned him to build, nine times out of ten they will accept his advice, even though it runs contrary to their original ideas, as long as the end result is what they are seeking. Basically, of course, this is the reason people go to architects.

For the same reason they go to doctors, lawyers, and other professionals when an expert's advice is desired to insure maximum satisfaction. Even in those projects that do not employ the professional services of an architect, the natural desire to get the most for his money almost invariably forces an owner to study similar structures which architects, the recognized experts in the business, have designed. Hence it is evident that architects and their associates are the principal factor in determining the growth of the architectural porcelain enamel market. They form the group which must be sold. Without their active approval, interest and demand, the market for porcelain enamel stands little chance of advancing beyond its present limits.

Architects in relation to their work

If a composite picture could be made of the average architect, it would show a combination artist, professional and businessman. This curious mixture of skills arises out of the requirements of their work. For architecture itself is unique in that it is, at one and the same time, an art, a profession and a business. As artists, architects are intensely alive to any new materials which will give greater scope to their creative ability in matters of form, texture and color. As professionals, they are constantly alert to safeguard and enhance their reputations while, as businessmen, architects are vitally interested in ways and means of getting the most out of every dollar entrusted to their spending. This conflict between art and business, coupled with the professional responsibilities of their work, make architects a somewhat

complex problem when it comes to selling.

Attitude of architects toward new or untried products.

For one thing, architects are inclined to select materials and equipment they know are approved by the profession as a whole in preference to products that have not acquired such general acceptance. While an architect might be inclined to use a new and hitherto unheard of material or appliance because of its seeming fitness to a particular problem, his professional reputation and business responsibilities combine to guide his selection to something in which the element of risk is reduced to a minimum. This characteristic reluctance to reject the old in favor of the new is easy to understand when it is realized that the ethics of their profession do not permit architects to advertise. As with doctors and lawyers, their business success is entirely dependent upon the reputations their work bring them. One obviously bad design, one faulty structure, one mistake in heating or plumbing, for example, might easily be enough to cause irreparable harm to an architect's desire to advance his career. Therefore, when confronted with a choice between a new material that looks as though it should answer his problem, and an older one which he knows has been widely and successfully used by other members of his profession for the same purpose, architects are almost forced to select the latter. They cannot afford to take a chance.

Architects as professionals

Another thing worth noting about this man-market group: Professionals the world over are jealous of their standing as authorities in their respective fields. Architects, being professionals, are no exception. This does not mean, of course, that members of the architectural profession are difficult to approach, nor that they close their minds once they have acquired the knowledge and ability which qualifies them as experts. In common with all professions, the practice of architecture requires con-

stant study to keep abreast of new developments. It is likely to mean, however, that, insofar as porcelain enamel is concerned, architects may shy away from the material, not only because the greatest percentage of them know little or nothing about it, but also — and more especially perhaps — because it has acquired a certain stigma through its principal use in the past by non-members of the profession: the building contractors

Editor's Note:

This second in a series of three articles by Mr. Lohman covers the problems facing the development of architectural porcelain enamel as a building material, and pictures the architect as the key to a broadened market.

In the first article, "The Post-war Conditions and the Architectural Porcelain Enamel Market" (September *Finish*), the author summarized the data and opinions on building potentials.

In the third article of the series, "Promoting Architectural Porcelain Enamel Requires Joint Action," Mr. Lohman offers specific suggestions for expanding the market for architectural porcelain enamel.

who, without benefit of architect, have handled many of the porcelain enamel installations found in the country today. That many of these jobs could not afford the services of an architect does not alter the fact that its predominant use in the past for store front face-lifting, and to advertise gasoline stations and wayside restaurants, has caused architects to regard porcelain enamel more as a make-shift than as a permanent type of material. The further fact that a preponderant number of installations do not meet professional standards of beauty and suitability is a possible added cause for the present antipathy of architects toward it. While there are many noteworthy examples of the use of porcelain enamel, done by some of the foremost architects in the land, the point here is that these examples are not numerous enough, nor well enough known, to have influenced this general attitude to any appreciable degree. As a result, it is safe to say that, for the architec-

tural profession as a whole, porcelain enamel has not yet gained the recognition necessary to insure its acceptance as a bona fide material in the same class as other similar-purpose materials.

Architects as Businessmen

Architects also display an understandable caution in the matter of specifying anything which, although well known to the general public, is not clear cut, well-defined and guaranteed. With respect to porcelain enamel, this means that architects want to know the specific limitations — as well as the advantages — of the material, how it should be used and why, what guarantees it carries and whether or not these guarantees vary with different suppliers. Also, they want to know where they can go for more detailed information in case of need. As has been mentioned, architects cannot afford to risk their careers on anything that requires them to substitute guess work and sheer gambling for positive knowledge and assurance that the material will do what is claimed for it. In this respect they are like any other businessman charged with the responsibility of spending money which is not his own.

Architects as artists

While the average architect probably knows there is such a material as porcelain enamel, very few have sufficient knowledge to visualize its enormous advantages as a design medium. In their business of designing beautiful, durable and useful structures, knowledge of this sort is, of course, essential to the increased use of porcelain enamel as a building material. True, most architects can see in porcelain enamel an excellent medium for advertising — a case of "damning with faint praise" since the majority of structures they design do not lend themselves to this type of display. Also, though architects admit the material can be cleaned easily, and that it is color-fast and scratch-resistant, they doubt its durability, particularly with respect to rust-proofness. Moreover, regardless of the opportunities for permanent color porcelain enamel offers, its characteristic glossy surface, which accentu-

ates irregularities in the metal, negates this appeal.

Then too, architectural porcelain enamel has not always been used with full appreciation of esthetic good taste. It is fundamental that any architecture, to be good, must be a frank and honest expression of what and why it is. Shingles made to look like terra cotta—shutters made to look like wood—these and other imitations, good as they may be in all other respects, are bad from the artistic standpoint as far as architects are concerned. Still another reason architects shy away from the use of porcelain enamel can be found in its principal use as a veneer. Here again, it contributes nothing to the requirements of frankness of design. From all this it would seem that architects and enamellers do not see eye to eye when it comes to the artistic side of porcelain enamel.

The need for standard sizes and shapes

For years "chaotic" has been the word most commonly used to describe conditions in the building construction industry. With the exception of certain kinds of equipment, there is scarcely a thing about construction work that is standardized—including the weather. The consequent waste of time, labor, materials and money is enormous. No other industry could afford to tolerate such conditions and, were it not for the very evident fact that a certain amount of building must be done no matter what the conditions, it is quite probable that the building construction industry would have disappeared from the business horizon long ago. As it is, this waste and inefficiency has made the cost of building construction so high in comparison with value received that the nation as a whole has suffered from inadequate and obsolete housing, poor or insufficient public facilities and substandard, inefficient places of work. If the enormously expanded need for new and remodeled buildings of almost every kind develops into an equally enormous demand postwar, the building construction industry will be in an even worse condition

than it was before. Since the industry will play a major role in postwar years, a great deal of thought is being given to ways of improving it.

One of these ways, of course, is to speed up building construction without sacrificing any of the end requirements of beauty, durability and usefulness. The answer seems to lie in standards. More and more, architects and builders are looking for certain minimum standards in the products they use. The interruption to normal construction activity caused by the war has given impetus to their thinking, and to the thinking of many suppliers, with the result that when peacetime building operations are on a rush basis, these standards will play a large and increasingly important part in the demand for such products. In the case of porcelain enamel, this does not mean that it should be limited to a fixed series of shapes and sizes. Quite the contrary. One of the great advantages of the material is its flexibility of form which gives architects far greater scope in design than is possible with certain other materials. It does mean, however, that, in addition to offering advantages of design flexibility through special sizes and shapes made to order, porcelain enamel should be obtainable in such standard stock sizes and shapes as will meet the needs for quick and easy handling with no sacrifice of beauty within these limits.

The need for a standard method of attachment and installation

As a correlary to the increasing need for standardized shapes and sizes that can be easily fitted into postwar building plans, the need for a standard method of installation and attachment is acute. The value of standardized shapes and sizes is almost completely nullified if a multitude of different handling methods have to be used. Moreover, the basic purpose of standards, which is to encourage an ever-increasing use of porcelain enamel, would be lessened very considerably by failure to make the standards as all-inclusive as the characteristics of the material permit. Lack of uniformity in the matter of

hanging and installation methods complicates the architect's job of designing and writing specifications, of making valid comparisons of competing bids, and of determining whether or not the finished job is as satisfactory as it might have been had some other method of handling been used. It also complicates the contractor's job. The inevitable confusion of mind which all this creates cannot help but build up resistance to using porcelain enamel. At the very least it adds to the selling value of other facing materials which, because they are standardized in this respect, do not require so much mental effort to reach a sure decision. With architects and builders, as with anyone else, the more complicated a thing is to use, the more difficult—and expensive—it is to sell. Hence, while all attachment and installation methods now used have undoubted merit, it seems probable that their very number and diversity detract from the salability of porcelain enamel to the point where none of the methods are completely satisfactory.

Standards with relation to building codes

Making porcelain enamel standards as all-inclusive as possible also might help to further legislation permitting a wider use of the material than is possible under existing building ordinances. For, if it is agreed that non-standard hanging methods create a certain degree of resistance on the part of architects and builders, it is reasonable to assume they may create a similar resistance on the part of building code officials. To a great extent, the acceptance of architectural porcelain enamel depends, not only upon its value as a medium of design, but also upon its ease of installation and its permanence when once in place. In the majority of cases, installation of the material probably will be done by workers who have little or no interest in its promotion. Lack of a standard method of hanging might raise the question of whether, in view of the many methods now in use, any are particularly satisfactory. Should there be any doubt, it

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A modern holloware enameling plant

Ideas for plant mechanization to decrease production costs

By Dr. Paul A. Huppert • LISK MFG. CO. LTD., CANANDAIGUA, N. Y.



The war is in its final phase, and destruction is now being replaced by reconstruction all over the world. The entire enameling industry must be prepared for a tremendous increase in production, and before this rush reaches its climax the enameling industry must be prepared for the highly competitive period which will follow. Competition will be provided by new materials, possibly by imports from other parts of the world and from its own industrial field.

Two methods are being used to meet this competition successfully; improving the quality of the manufactured goods, and decreasing the production costs. Much work has been done in both cases, but far greater efforts are expected from the industry in the future.

Labour the big cost in holloware production

Because of the very nature of the manufacturing of enameled holloware a great portion of the production costs is involved in labour. Both here and in Europe this figure varies from 25 to 35% of the entire manufacturing cost. Therefore, the best chance of lowering production costs lies in modernizing the plant layout, and in the full mechanization of the factory. Any improvement in this direction will reduce both direct and indirect labour cost, and will result in the production of higher quality goods because of the simplified handling of the ware.

Before any reorganization can become effective however, the assortment of items and the variety of qualities produced by an individual plant

must be studied and reduced to an absolute minimum. This also refers to the number of sizes manufactured in each item. The importance of such a measure cannot be over-emphasized, and we can frankly admit this fact is one great lesson we owe to the events of the war that necessitated the restriction, at least temporarily, of the number of "permissible items." This taught the manufacturer the economy of running fewer items on a large production scale. Any line of which a large number of pieces of exactly the same type and finish cannot be produced at one time has to be cut out, even if it means a temporary disagreement between sales and production management.

Synchronized production important

The next important step is to synchronize production in such a manner that any storing of ware during the course of operation can be cut out. This will help speed up production schedules — which will please the customer, who may often prefer quick deliveries to reduction in prices.

The mechanization of an enameling plant can be divided into three groups:

- (1) equipment and machinery working on a continuous basis;
- (2) straight through production;
- (3) loading and unloading devices for incoming materials as well as finished goods.

Continuous equipment

Continuous burning, annealing and smelting furnaces, continuous dryers, washing machines, automatic and semi-automatic pickling lines or pickling machines, presses with transfer feeders, or multiple presses and the like are well known and are widely used in the industry today.

This type of equipment, however, should not be considered as individual units, but should be arranged in the modern plant layout in such a way that they serve not only as labour and/or material saving installations, but also simultaneously, as transportation through the plant.

Transporting goods between manufacturing processes

Factory transportation depends on the individual requirements of each plant. If a factory is working on a mass production basis only, it is easier to organize a continuous progressive production line. This is done by starting with the steel plates in one end of the plant, placing presses, spinning, trimming and beading lathes, welders and auxiliary machinery along or on both sides of a main conveyor, which can transport the ware through the stamping department directly to the cleaning-pickling department.

From the pickling room another parallel line traverses the enameling department, and finished ware is packed on a conveyor, and the boxes go on a gravity conveyor to the warehouses or freight cars.

A plant which must produce a split variety of items will have to divide its main departments and work on smaller conveyors or leading side conveyors to a main line. This is necessary both in the stamping and enameling departments. Through the cleaning department and to the warehouse the lines can be unified.

In the enameling department the proper layout will depend on the variety of colors, number of coatings, number of various qualities produced,

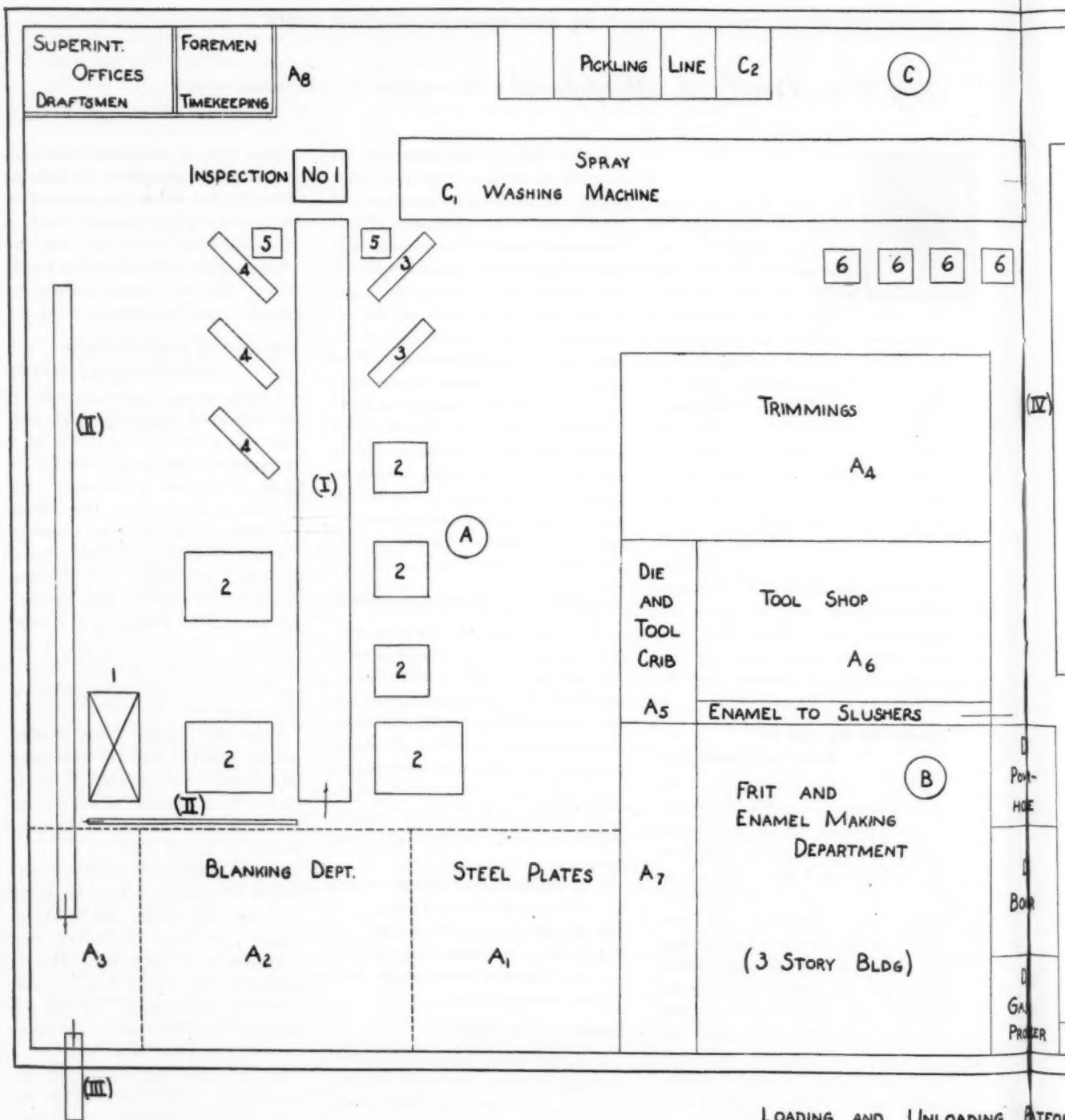
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See layout . . . Pages 28 & 29

Plant layout No. 4

A complete conveyORIZED factory

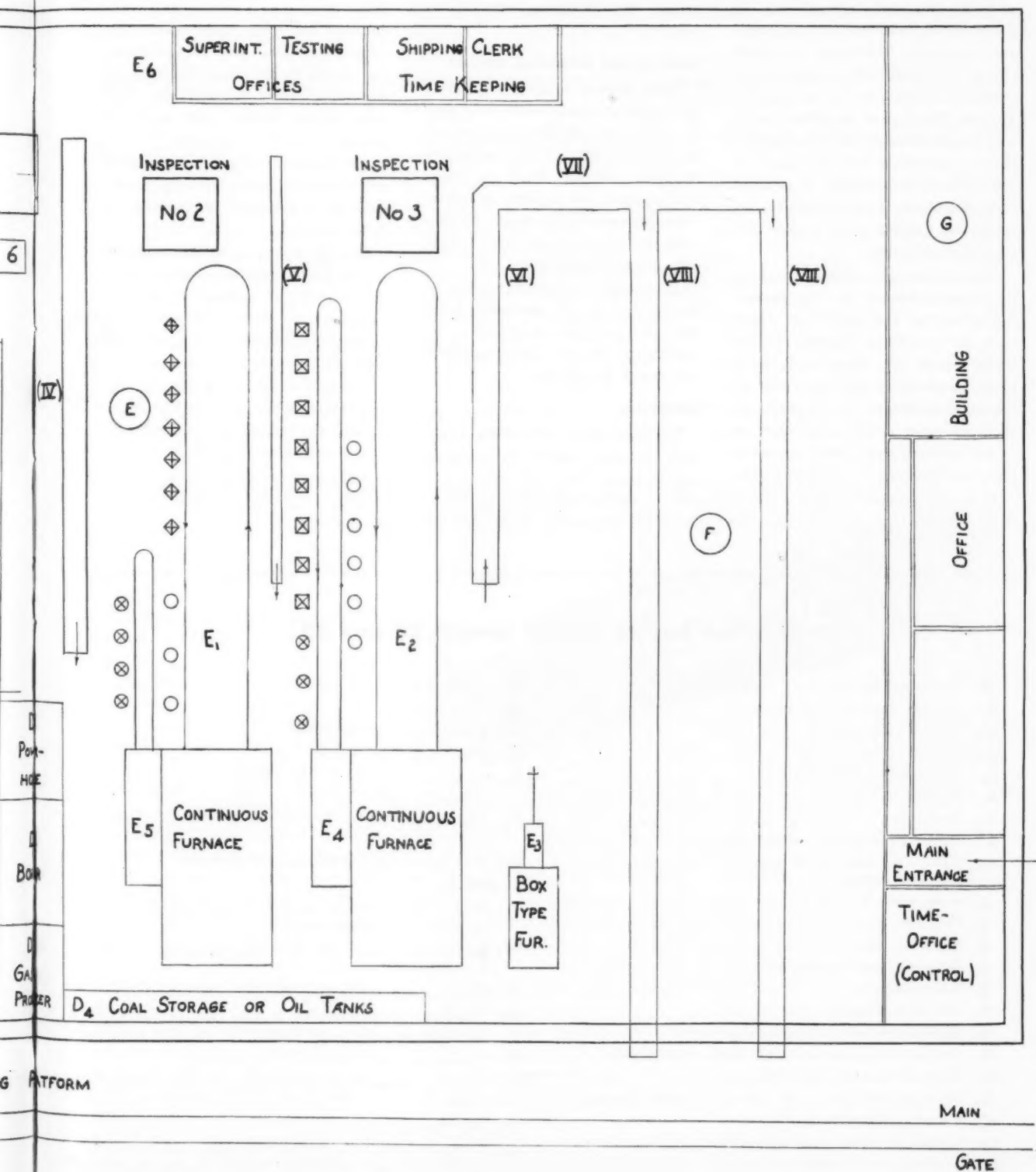
POSSIBILITY OF EXTENDING PRODUCTION FACILITIES



- ⊕ GROUND COAT DIPPERS
- ⊗ FIRST WHITE COAT DIPPERS (IF REQUESTED)
- ⊠ FINISH DIPPERS
- BEADING OFF, BEADING AND FURNACE LOADING

facturing and enameling plant for holloware

(See additional description key on page 30)



- 1 GAS PRODUCER } CAN ALSO BE PLACED, IF REQUESTED,
- 2 BOILERHOUSE } IN ADJACENT BUILDING
- 3 SPARE DRYER IF NEEDED FOR SPECIAL ITEMS THAT CAN NOT BE HUNG DIRECTLY ON FURNACE CHAIN

→ from Page 27

and finally, on the number and types of furnaces in use.

The choice of transporting units will depend on the individual needs of each plant. As a rule all types of conveyor systems, such as belt conveyors, gravity conveyors, overhead chains, monorails with hangers, even ordinary chutes can be successfully applied. The type of installation used will be influenced by the shop policy, shop organization and the plant itself. The ideal condition is to store only steel, enamel raw materials, enamels and finished goods packed and ready for shipment.

Special attention must be given to the organization of the manufacturing of covers and additional parts, such as percolator baskets, double boiler inserts etc. These items have to be produced at the same time as the main bodies, so as to arrive in the warehouse at the same time in order to avoid any delay in assembling and packing the finished goods.

If it is necessary to pack various items together in one box, such as

for export, production must be organized accordingly.

Special chains will take care of trimmings, storing and loading baled scrap and assorting, assembling, labeling and wrapping the finished ware.

Loading and unloading devices

These devices consist of elevators, lift trucks, portable conveyors, gravity conveyors and other types of conveyors for handling boxes, sacks, kegs or bulk material. Such equipment is in common use in other industries.

Investments in this type of equipment will be amortized more rapidly with greater production.

An example of a modern plant for the production of enameled hollowware such as I have described is represented by the accompanying sketch and keyed description.

Conclusion

The most direct method for a company to reduce costs is by mechanizing the plant. This will make it possible to reduce selling prices, due to decreased production costs, and will

increase profits due to increased production. Under correct operation a superior product will be produced.

Labour saved by the installation of labour saving devices can be used for other productive work so that workers need not suffer under such a re-conversion plan, and the company can profit by increased turnover of material, which automatically will help reduce burden and overhead charges.

The increase of production speed will overcome sales difficulties created by restrictions of number of items produced.

Greater production can be obtained in the same sized plant since floor space used for banking of ware is materially decreased, and the space no longer needed for storage can be filled with productive equipment.

The percentage of seconds should be reduced, supervision will be eased up, and the quality will improve due to less and better handling. In this way the post-war demands calling for "QUALITY FIRST!" can be met by the industry.

Description key to Layout (pages 28 and 29)

- | | |
|---|--|
| A. Stamping department | D₂. Boiler house |
| A₁. Storage room for steel plates | D₃. Power house |
| A₂. Blanking department | D₄. Coal bunker (or oil tanks) |
| A₃. Storage of baled scrap | E. Enameling department |
| A₄. Production of trimmings | E₁. Continuous U-type furnace No. 1 for ground coat (and 1/2 finish) |
| A₅. Die and tool crib | E₂. Continuous U-type furnace No. 2 for finish (and 1/2 finish) |
| A₆. Tool shop | E₃. Box type enameling furnace for odd work |
| A₇. Receiving clerk and various supplies | E₄ and E₅. Dryers |
| A₈. Offices of department superintendent, draftsmen and timekeeping | E₆. Offices of department superintendent, timekeeping, quality control and laboratory |
| 1. Scrap baler | IV. Conveyor for inspecting black shapes, dinge-knocking |
| 2. Presses | V. Conveyor for unloading furnace, and controlling |
| 3. Spinning lathes | VI. Conveyor for unloading furnace and assorting, labeling, wrapping and assembling finished ware |
| 4. Trimming and beading lathes | VII. Gravity or belt conveyors for packing |
| 5. Gas welders | VIII. Gravity conveyors for storing and loading packed boxes |
| 6. Electro-welding | F. Warehouse |
| I. Main conveyor of stamping department | G. Office building. First floor: Workers' lockrooms, showerbath and recreation room. Second floor: General offices. |
| II. Conveyors for transporting scrap to the baler | |
| III. Conveyor for loading baled scrap | |
| B. Multi-story building for frit and enamel making | |
| C. Cleaning department | |
| C₁. Continuous spray washing machine | |
| C₂. Pickling line (for annealed ware) | |
| D₁. Gas producer (if requested) | |

Mobile grocery stores —

a new market for porcelain enamel?

By Elsa Gidlow • SAN FRANCISCO CORRESPONDENT FOR FINISH

A NEW enterprise with a seemingly fabulous future would appear to offer some rather interesting possibilities to the porcelain enamel industry. Although some of its details and more expansive promises place it in the "postwar dreamworld" category, it has definitely graduated from that classification by organizing a five million dollar corporation legally authorized to publicly dispose of its stock. Its plans call for commencement of operations now, and it seems to be headed in the direction of a test of public response very shortly.

A new method of food distribution

It is called Store-to-Door, which signifies a new method of food distribution by way of complete traveling grocery and food stores utilizing truck-trailer combinations of a special design. The mobile stores are so planned by the store architects that they could — and probably will — employ large areas of porcelain enamel on interior surfaces at least. Sponsors of the undertaking have no hesitation in saying that certainly the refrigerated and cold storage sections will require porcelain. As perfect sanitation will be both an aim and an advertising point in this new method of food handling between wholesale source and the consumer, porcelain would seem to be a highly logical choice of material for all areas of the distribution vehicle that come in contact with the products to be sold.

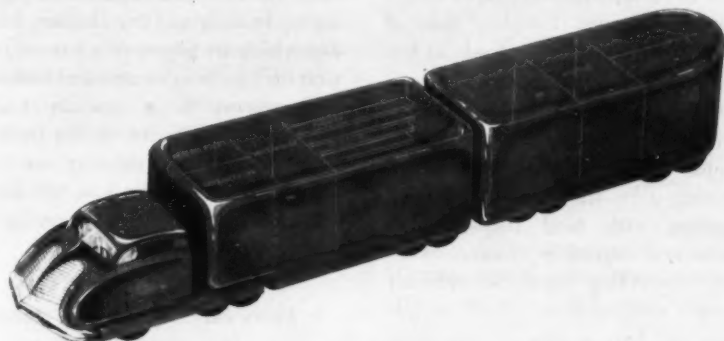
The following condensed description of what Store-to-Door on Wheels will be and do, is taken from facts supplied by the inventor of the idea, George L. Riccomi. Riccomi is president of Associated Food Distributors, Inc., formed some months ago to launch the new system. He is a retired veteran of the food industry in San Francisco, California, where

Store-to-Door will have its inception. He has owned some of the best known restaurants in this region, and was also associated with produce distribution. His partner in the enterprise is Edwin L. Anderson, serving as executive vice president of Associated Food after many years in the chain store merchandising field, twenty-three of them in executive capacities with J. C. Penny Company. Both men are California born and educated.

The enterprise plans to place "a modern, completely stocked, mobile food store no farther away than a

"Naturals" for porcelain enamel

The set-up comprises three divisions. District Stores, situated in residential districts, will be supplied from the company's own main depots in the wholesale or shipping sections of the city. These depots or plants will process foods (as in quick freezing) and will be "equipped with every modern facility for the storage of fresh and frozen foods, staple and packaged items, and for the processing of meats." The depots also will give wholesale distribution service on a one-stop basis to large food pur-



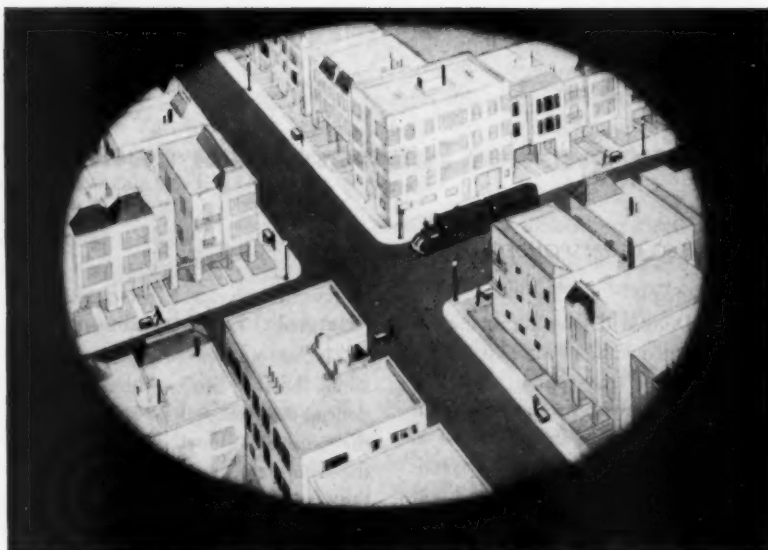
This Store-to-Door on wheels will be parked at a residential street intersection and will be manned by crews of nine, a driver and eight salesmen — the latter equipped with rubber-tired hand conveyors. They will call at each home in the district to deliver orders.

block from your door," doing away with old fashioned food buying methods and offering to the householder the following attractive advantages:

1. The finest foods at the lowest possible prices,
2. Free home delivery,
3. Fresh, frozen and staple foods delivered *within a few minutes* of the time the order is placed,
4. Personal service from salesmen, and, eventually,
5. "Everything bought for the home" delivered from these mobile stores to the door.

veyors like restaurants, hotels, steamship companies and concerns selling cooked foods. These main depots — one of which will be established in each city where the system goes into business — are "naturals" for porcelain enamel surfaces and interiors, particularly for the processing, cold storage and refrigeration sections, and for the very ambitious frozen foods departments that are a part of the projected service.

Supplies moved from these main depots to district stores daily will be placed in *sanitary storage* (Associ-



This view shows the Store-on-Wheels parked at a typical intersection and the salesmen "spreading out" to make their calls.

ated emphasizes the "sanitation") for transfer to store shelves or the district store fleet of "traveling stores." These district stores, Ricconi tells us, "are to be ultra-modern, super deluxe markets carrying complete lines of fine foods," with frozen foods as featured items.

Operations are planned as follows: Every week day the big mobile stores, loaded the previous night from the district store stocks, will start out supplied with food staples, fresh fruits and vegetables, frozen foods, and "everything found on ordinary grocery store shelves." Each mobile store will have a crew of nine men, a driver and eight salesmen. When the truck-trailer store pauses at residential intersections the eight salesmen, each with a rubber-tired hand conveyor, will spread out and call at the homes on eight sides of the intersection, delivering everyday food staples like break, butter, milk, and eggs from the conveyor. While doing this they will take the housewife's order for the rest of her food needs, to be relayed back to the store on wheels parked at the curb.

Food orders by radio

Associated Food Distributors hope to speed up deliveries by equipping each salesman with a short wave "walkie-talkie" radio which will keep him in constant touch with the store

on wheels at the corner. The ninth man, who is stationed at the truck, fills the orders which are instantly delivered by motorcycle to the salesmen. The latter, meanwhile, are packing up laundry and dry cleaning bundles which are placed in a bag tagged with the customer's name and address and returned to a specially built, separate compartment in the trailer. When laundry and cleaning are finished they are returned on the next trip, wrapped in sanitary packages and kept separate from the food.

After one section has been served in this way, the mobile store moves on and repeats the operation at the next stop on the schedule. Territory will be covered on an every-other-day basis. Salesmen will take orders for fresh meats, poultry, etc., for delivery on their next trip. A twenty-four hour telephone service at district stores will receive special orders or instructions from housewives for anything forgotten, for delivery on the next trip to her location.

Each Store-to-Door traveling unit will consist of a truck and trailer, especially designed and outfitted with storage shelves and compartments for frozen and fresh foods. The front portion will have refrigeration, frozen foods, vegetable storage, and the grocery goods display sections. Housewives may come and shop in the traveling stores as they park at the curb. The second half of the trailer has compartments for shelf replacements storage; orders taken or telephoned, packed for delivery; and the laundry and dry cleaning compartments.

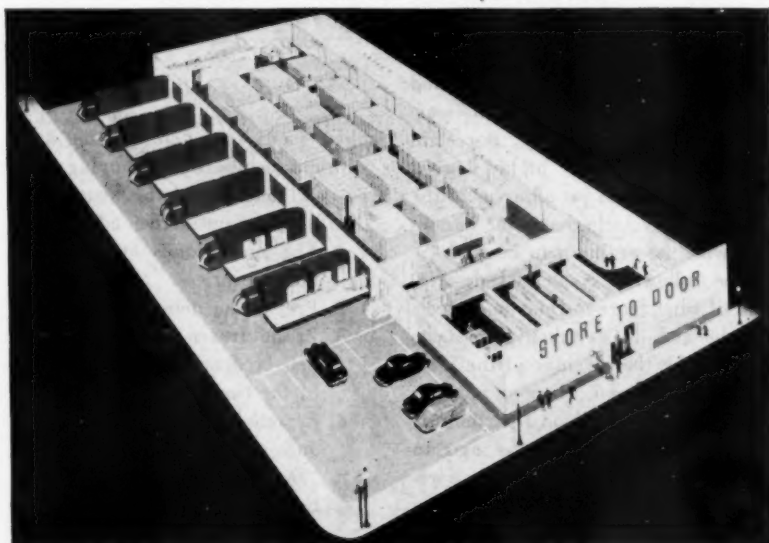
"As it looks now" —

porcelain enamel

Executive vice president Anderson told *finish* that "since a main factor we are interested in is perfect sanitation — plus good appearance —

to Page 48 →

Every week night the big mobile stores will be loaded from the district store stocks to start their next day's deliveries.



The Washington round-up

By Wilfrid Redmond

THE majority of WPB industry divisions will have terminated their operations about October 1, leaving behind only a small personnel to clean up administrative details. However, WPB will continue to function and to regulate reconversion. General inventory controls will remain in effect. PR-32, a new regulation, will limit the procurement of stocks of materials to a working inventory. Most raw materials can be purchased only in sufficient quantity to provide a 60-day inventory. The inventory control was requested by the President to prevent speculative buying and hoarding of materials and to protect small industries and small manufacturers in the scramble for such items as steel and copper. As the margin of safety widens, inventories may be increased or control removed altogether.

WPB expects heavy production of washing machines

The domestic washing machine industry may reach the pre-war production rate in the final quarter of 1945 with an output of 500,000 machines. WPB estimates of reconversion production have had to be revised in most cases. Industries are progressing much more rapidly than was foreseen two months ago. In the washing machine industry, it is now forecast that 75,000 domestic units will have been produced in the third quarter as compared with the estimate of 50,000.

The supply pipelines are not flowing freely as yet, but most materials are available. Speed of delivery may be a problem for a month or so on such items as sheet steel, grey iron and malleable iron castings, motors, wringers and quick drying protective coatings. The limiting factor at the moment for the domestic washing machine industry is sheet steel. WPB officials are optimistic and forecast that steel will start coming through early in October. Steel mills haven't their schedules straightened out as

yet. However, deep drawing enamel stock is coming along better and this situation should clear up rapidly. Some manufacturers are getting what they need now while others report difficulty. Enamels are in good supply, and grey iron and malleable castings will loosen up as soon as the labor situation improves. At the moment, the foundries are having some difficulty recruiting labor.

Manufacturers will be required to tag their washing machines with their retail ceiling prices, OPA recently announced. This policy will apply to all major reconversion items. Manufacturers of all domestic laundry equipment may increase their 1941 prices by 5.2 per cent *, but consumer ceilings must remain at 1942 levels. If a firm is unable to produce with the increase, application may be made for individual adjustment. However, the industry-wide increase factor may be used by a firm only if it produces about the same proportion of inexpensive items in the reconversion period that it produced in its last year of normal output.

Antimony oxide

The antimony oxide situation has eased up to permit the allocation pound for pound of consumer requests. The Tin-Lead-Zinc Division emphasizes, however, that users must apply for their allocations on the forms provided for that purpose. The antimony metal supply is no longer a critical problem. There is plenty of the metal available in China and the only bottle neck is transportation. As soon as this situation is met, the supply will be adequate for all reconversion purposes.

Bathtubs and sinks

Two manufacturers, Kohler and Standard, have begun production of sinks and output is expected to improve rapidly. The Plumbing and Heating Division of WPB will stand by to do any priming that may be necessary. Directives are now out to

* See news report on Page 39, Col. 3

allocate steel for bathtubs and this item should be in production early in the fourth quarter.

The refrigerator picture as Washington sees it

Production of domestic mechanical refrigerators is expected to reach 700,000 in the fourth quarter, according to latest WPB estimates. Output in the third quarter probably reached 125,000.

The removal of distribution control in mid-October or possibly earlier is being considered. In general, WPB said, manufacturers are not experiencing great difficulty in getting into full-scale production. The refrigerator industry does not report any trouble getting steel delivery, but the shortage of tin is causing concern to some manufacturers.

The main bottleneck at this time is tools, equipment and facilities. The situation with respect to tools, presses, and other items of equipment is holding up a number of manufacturers, but it is expected to clear rapidly. Officials point out that the difficulty seems to be that suppliers of these items have not yet worked out delivery schedules. They are expected to correct this program soon.

Under PR-28, the new CC rating is provided for cases of urgent need, but will be used sparingly in order to avoid giving one manufacturer a competitive advantage over another, and also to encourage shopping around among suppliers. The CC rating has not been granted to any refrigerator manufacturer as yet although there have been a number of applications. It is possible, WPB officials say, that the rating may have been approved for some small stuff by field offices, but Washington has not taken favorable action on any request.

In the expansion of facilities some trouble has been experienced in getting brick and structural steel. The brick industry has been given a priority for labor and the situation will improve. Soil pipe has been given preferential treatment also. Other manufacturers report difficulty in getting plating and shelving and one has been unable to get components because of paper shortages.

Table tops

With controls now removed on production of table tops, manufacturers are rapidly reconverting to peacetime operations. WPB officials say that the industry may experience difficulty for a time in getting exact types of steel, but that this situation should clear up in October. Skilled labor is

to Page 56 →

Looking for Stronger, Cleaner **COLORS?**

You'll find them here at Ferro! Yes, Ferro Color Chemists are now able to supply brilliant greens, attractive tans and a concentrated black actually superior to "prewar" oxides. All are products of Ferro Wartime Research—and have been production-proved for your added protection.

While there are some colors we are still unable to supply, due to restrictions, we invite your inquiries. In fact, we *challenge* you to send us a color we can't match and supply—if not immediately, then within hours after restrictions are lifted.

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OCTOBER • 1945 finish





FOUNDATION FOR A FINE FINISH

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Toncan Enameling Iron Sheets are made to start flat and stay flat. They won't warp or sag after repeated firing, regardless of sheet size. Their enamel-taking qualities also help to produce better-looking, longer-lasting finishes at lower cost.

The brand of sheet metal you use is a big factor in other operations, too. Toncan Enameling Iron is preferred also by many vitreous enamelers for its

fine fabricating, welding and deep drawing qualities.

When specially processed for workability, it takes *any* type of fabrication quickly and cleanly, and works *uniformly*. When processed for deep drawing, it flows smoothly into the deepest draws without wrinkling or cracking. When made for welding qualities, it produces strong, clean welds at top speed.

So, for better workmanship, fewer rejects and lower production costs, start with Toncan Enameling Iron.

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PERMANENT



DID YOU EVER TRY to decipher an old, stained paper instruction card, or a corroded metal plate, or try to find a mislaid set of directions?

Do your customers write for replacement parts and say that they can't decipher the model number on a name plate?

Why shouldn't your instructions and name plate last as long as your product?

Why shouldn't your instructions and model data be permanently fastened onto the product to which they apply?

Why shouldn't necessary data of this sort be always legible, not subject to the action of any chemicals or fire or normal abuse?

During the war we made thousands and thousands of name plates for equipment to be used in the field all over the world. Actual performance shows such plates permanent and practical.

They are inexpensive if made white on blue like the picture. If you want to spend more money for them, they can be two or three colors on any color background.

Send us some copy. Tell us size and quantities. We will make it easy for you to order.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO (Factory at Nappanee, Ind.)

NEWS

P.E.I. schedules annual meeting

Word comes from the Porcelain Enamel Institute that as a result of relaxation of the ODT ban on conventions the P.E.I. annual meeting will be held at the William Penn Hotel in Pittsburgh on October 24 and 25. Committees scheduled to meet in Cincinnati in late September will have prepared recommendations bearing on future Institute activity for presentation before the annual meeting.

Committees to meet in Cincinnati include the Forum Committee, Program Committee, Institute Development Committee and the Executive Committee.

Art Lander has new son

September 1st marked the arrival of 6 lb. Arthur Lander, Jr., in the Arthur Lander home. According to the report, Father, Mother and Baby are all doing well.

Arthur Lander, Sr., is enamel technician at the Cribben and Sexton Company, Chicago.

Eastern enamellers plan reorganization program

About the time this issue goes into the mails the Eastern District Enamellers Club will be holding its first postwar meeting at the Ritz Carlton Hotel, Philadelphia. The meeting scheduled for Saturday, September 22, will have as feature speaker H. B. Brown, promotion manager of Phil-

co Corporation. Mr. Brown will cover the subject of postwar merchandising of durable goods, and his talk will be followed by a general discussion of problems pertinent to everyone directly or indirectly connected with the production of porcelain enamel and its application.

Reorganization planned

Before wartime travel restrictions caused the suspension of meetings of the Eastern Club, a committee was formed to suggest reorganization plans for the strengthening of the Club. This committee, consisting of Fred Campbell, R. R. Danielson, N. R. Klein, Paul Seasholtz and Herbert Turk, will offer a studied list of suggestions to govern future Club activities. Included is a suggestion that a committee be appointed to rewrite the By-Laws, and that four meetings a year be held—two in the Philadelphia area, one in the Baltimore area and one in the New York area. There is also a suggestion that the name of the Club be changed from the Eastern Enamellers Club to the Eastern Enamellers Association. Other suggestions include a designation of the officers, their terms, annual dues and a plan for assuring acquaintanceship among all members.

An active club

The Eastern Enamellers Club, or Association as it may be called in the future, has been one of the most

active groups, and it seems evident from the plans to be discussed that the intention is to keep the Eastern Group in the forefront of cooperative enameling activity.

Chicago District Enamellers Club to meet October 13

The first post-war meeting of the Chicago District Enamellers Club will be held Saturday, October 13, in the Lincoln Room of the La Salle Hotel, it was announced by C. M. Andrews, acting chairman of the publicity committee.

Welding will be the principal subject for the first meeting, with two speakers covering arc, spot and seam welding as applied to the porcelain enameling industry. It is expected that many developments for war industries will show possibilities for peacetime use in the production of enameled products. An additional feature of the program will be the showing of a colored movie on architectural porcelain enamel by the U. S. Steel Corporation.

Committees announced

President W. W. Higgins has announced the following committees for the current year:

Program Committee—C. M. Andrews, University of Illinois, chairman; F. A. Petersen, University of Illinois; Frank Porter, Inland Steel Company; and W. J. Plankenhorn, Federal Electric Company as Member Ex Officio.

Publicity Committee—Ralph Cook, University of Illinois, chairman; Jerry Hofstetter, Ferro Enamel Corporation; and Howard Moad, Chicago Vitreous Enamel Product Co.

Membership Committee—Ed. Bolin, Chicago Vitreous Enamel Product Co., chairman; William Donaldson, Geo. D. Roper Corporation; and Rudyard Porter, Carnegie-Illinois Steel Corp.

Other meetings planned

The officers and committee chairmen met recently to plan for additional meetings. As a result tentative plans have been completed for three meetings in addition to the one scheduled for October 13. The dates set are December 8, February 23 and May 3. Some of the subjects sug-

gested for discussion at these meetings include Infra-red drying, automatic pickling, enamel plant control, enameling furnaces and low fire finishes.

Technical Societies Council in new offices

The Chicago Technical Societies Council, Inc., is now located in new offices in the Monadnock Building, 53 West Jackson Blvd., Chicago 4, Ill. Telephone — Harrison 2679.

All Council activities will be handled from these new offices under the direction of a permanent staff. It is indicated the Council will be able to

render more effective service to all affiliated societies.

Both the Chicago District Enamellers Club and the Chicago Section of A.C.S. are member societies.

No price control on signs

All types of signs are exempt from price control as a result of OPA supplementary order No. 126.

The National Electric Sign Association reports that all manpower controls have been removed, and that salaries and wages may be increased without WLB approval as long as no price increase is involved.

Washer-Ironer manufacturers protest OPA pricing formula

The OPA's announced decision to grant a maximum increase of 7.7 per cent over 1941 F.O.B. plant billing prices as the factory ceiling on household washers and ironers will be protested formally as soon as the ruling is received by the industry, according to Bernard J. Hank, Chicago, who is president and chairman of the board of the Conlon Corporation and chairman of the OPA domestic laundry equipment industry advisory committee.

"The OPA pricing policies, if adhered to, will defeat the tax program of the United States government," he declared. "When you prevent profits you automatically prevent collecting taxes on profits."

The advisory committee objected to the OPA's original figure of 5.2 per cent, characterizing it as based on an "unacceptable and incorrect pricing formula."

Manufacturers at their latest session with the OPA said they would proceed on their cash reserves, losing money in returning to civilian production, and must have relief by 1946.

"Industry members announce also that they are reviewing their plans for the expansion of plant facilities and employment," Mr. Hank said.

"The OPA pricing formula is particularly bad because before a manufacturer can get price relief, if at all, he must go further into the red. Conceivably, even if he got the maximum relief possible under OPA regulations, he easily might stay in the red."

Pemco to increase plant capacity fifty per cent

Work is rapidly progressing at the Pemco Corporation on the installation of another wholly continuous smelter unit and further improvements are being made on the four continuous units now in operation. This expansion is but the first step in an ambitious reconversion program long planned for post war, according to company spokesmen. It is estimated that these additions and changes will increase the capacity of the plant more than fifty per cent.

Quoting Mr. Harold Wolfram, vice

New west coast plant to produce porcelain lined water heaters



Fowler Manufacturing Company of Portland, Oregon, recently completed construction of a new streamlined, line-production plant which consolidates its Portland and Spokane factory operations.

The company has continuously engaged in the production of electric water heaters since 1914. During the war the heaters have been produced for Pacific Northwest housing projects. Two other peacetime products are range boilers and porcelain enameled street signs. Reconversion has already taken place, and the plant expects to be distributing thousands of porcelain lined water heaters soon, the speed of distribution depending on materials and manpower.

The new plant is reported as one of the most modern designed and

best equipped factories in the Northwest, and the only one of its kind in that section. The building is a block and a half long, with floor space of 60,000 square feet, and a roof of saw-tooth design for maximum lighting.

Continuous furnace plant

A modern, continuous furnace is being installed to greatly increase the plant's capacity for porcelain enamel application. P. L. Fowler, general manager, stated that the company's operations have been centralized to provide for additional line-production and assembly space in view of their anticipated expansion for peacetime. He pointed out that water heaters are one of the important items that have been listed in home surveys for replacement or purchase by housewives throughout the country.

president and works manager: "Faith in the future of porcelain enameling, of course, dictated our decision to carry out these long planned improvements. . . . Equipment has been materially improved and processes—thoroughly laboratory and plant tested—assure an even more uniform product." Mr. Wolfram further stated, "With this new equipment Pemco's

capacity will be increased many carloads each day. But it becomes more evident that even this huge capacity will be taxed to the limit."

Pemco officials emphasize the statement that the improvements now underway are but a small part of their expansion program. As men and materials become available, this activity will be broadened.

McCall's magazine presents 77 of the first post-war appliances

At a recent press conference, Otis L. Wiese, Editor-in-chief of McCall's Magazine, said:

"In its September issue, McCall's presents photographs and descriptions of 77 of the first post-war washing machines, clothes driers, home freezers, refrigerators, electric, oil and gas ranges and ironers.

familiar with the projected post-war products, and prepared to present them to its readers as soon as they were ready.

"One result of these meetings is the presentation of the 77 actual appliances in the September issue. These, of course, are not all of the post-war appliances that will be soon

of the 1942 models. However, of these latter, Miss Sweeney observed that the 1942 models had reached comparatively few consumers, and so are new to millions of women.

Among the manufacturers represented, some have become household words in America; others are brand new to the home appliance field; and many manufacturers have added new appliances to their lines.

*Editor's Note:

Notice the references to "porcelain enamel inside and out" in the McCall description of this new Bendix washer. It seems significant that this pioneer maker of automatic washers is offering a cabinet type model with porcelain enamel exterior—the finish that is unaffected by soaps, alkalis, moisture and hard usage.

New Conlon appointments

Appointments to three key positions in the Conlon Corporation, Chicago, are announced by I. N. Merritt, vice president and general manager.

Roy E. Andree, Meadows division assistant to Mr. Merritt when he was vice president and director of the Electric Household Utilities Corporation and president and director of its Meadows Manufacturing Company subsidiary, becomes Conlon director of sales.

A. T. Blakemore, former Electric Household sales supervisor, has been made executive assistant.

George Conley, former special engineer of Meadows and Electric Household, and more recently with Bendix Aviation and the Bristol, Pa., plant of Henry J. Kaiser, has been made chief engineer for Conlon.

Westinghouse to introduce automatic dishwasher

An entirely new design of fully automatic dishwasher, which it is said will take this kitchen appliance out of the luxury class for the first time, will be introduced by the Westinghouse Electric Appliance Division, Mansfield, Ohio, when full consumer production is resumed.

In referring to the new dishwasher J. H. Ashbaugh, vice president in charge of the Appliance Division, said: "To operate the new automatic



By Bendix

The pioneer makers of the automatic washer promise many improvements in their postwar model. Counter height, porcelain enamel inside and out, it fits as well into a kitchen laundry as into a laundry room.

**(Typical product and description from the McCall presentation)*

"With the coming of peace McCall's recognizes that consumer buying habits which were appropriate in wartime must be modified in peace, if we are to achieve the full employment all of us hope for. It knows that millions of women are in dire need of replacements and hungry for new labor saving devices. It is also aware that many consumers have come to expect far more drastic changes in post-war products than industry actually has in store for them.

"Realizing its obligation to prepare its readers for the ideas and actual products of peace, McCall's inaugurated a year ago a series of conferences with manufacturers so that its editors might become thoroughly fa-

available in their respective categories. McCall's, however, believes them to be a representative group."

Miss Elizabeth Sweeney, McCall's Editor of Household Equipment, pointed out that of the 77 appliances shown, many had not seen the light of day before the war. High on this list are some of the automatic washing machines, the electric and gas heated home clothes driers, and most of the home freezers.

Many others of these appliances had their genesis before the war and many of them were in the process of being tested not only in laboratories but in consumers' homes when the war stopped production.

Still others are improved editions

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Installs in 1/2 the time



The swift, trouble-free installation of Veos Tile cuts cost . . . no special wall preparation . . . no plaster dirt . . . no fuss . . . no muss. You install once for life, and it's like having new walls all the time. Nothing clings to the hard porcelain surface. It cleans easily as a china dish. Eliminates expense of periodic refinishing. Modern tile sizes, colors, shapes, permit rich individual wall and ceiling effects. Installations are made by factory-trained experts, and guaranteed against cracking, crazing, or color-fading for the life of your home or building.

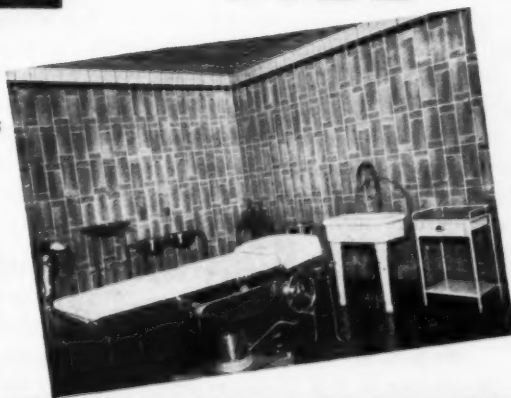
Write for further information.

VEOS PORCELAIN ON STEEL TILE

10 Big Advantages

For Residences, Commercial and Industrial Buildings, Institutions

- Installs in HALF the usual time
- No extra charge for colored tile
- Light weight . . . ideal for new work or remodeling
- Upkeep at a minimum
- Quick, easy servicing
- Won't crack or craze
- Won't color-fade
- Won't loosen
- Won't warp or sag
- **GUARANTEED FOR LIFE OF BUILDING**



CLYDE PORCELAIN STEEL CORPORATION
CLYDE, OHIO

dishwasher, the housewife simply places her dishes, glassware and silver in the square, top-opening unit, closes the lid and presses a button. The machine then sprays the dishes, washes them, rinses them twice, cleans and drains itself automatically and then shuts off. The complete cycle requires about 12 minutes. Because the water is 150 degrees Fahrenheit, about 30 degrees hotter than human hands ordinarily can stand, dishes are far cleaner than when washed by hand." He further states: "It is expected that the basic unit without a cabinet, that is, one that will fit into a work surface next to the sink, will sell for less than \$100."

New west coast chemical company

Word comes to *finish* of the formation of the Chemical Process and Engineering Company, with office, laboratory and factory at 912 East Third Street, Los Angeles, California. Principals in the new company are Roy W. Armour, formerly with Trojan Products Company, Chicago, and John Haslett, formerly Los Angeles sales distributor for Trojan.

According to the announcement, the new organization will manufacture a complete line of cleaning compounds especially developed for the porcelain enamel industry.

Additions to Harshaw organization

L. C. (Lew) Farrow joined the Harshaw Chemical Company organization in Cleveland early in September to work on the technical development of porcelain enamel frit. Mr. Farrow was, until recently, at Strong Manufacturing Company in Sebring, Ohio.

Dr. William Morris has rejoined the Ceramic Research Department at Harshaw after about a year's absence, during which he was with the University of Florida.

Republic Steel announces election of two officers

The election of N. J. Clarke as senior vice president and J. M. Schlendorf, vice president in charge of sales of Republic Steel Corporation, was

announced recently by T. M. Girdler, board chairman, and C. M. White, president, following the directors' meeting of the corporation.

Mr. Clarke has been vice president in charge of sales for Republic since September, 1930, shortly after the corporation was formed, and will be succeeded in that position by Mr. Schlendorf who has been assistant vice president in charge of sales.

Pearlman starts new company

S. B. (Blackie) Pearlman, who was for 22 years with Bright Light Reflector Company, Brooklyn, N.Y., has formed his own company — Atlas Electric Products Co. at 201 Boerum St., Brooklyn. The new company will manufacture electric appliances and lighting equipment. Says Mr. Pearlman, "My products, of course, will be finished in porcelain enamel."

Adams board chairman and Guthrie President of Newark Stove

Mr. T. D. Adams, for the past four years President of the Newark Stove Company, was named Chairman of the Board of Directors of the company on September 1, 1945.

Mr. F. H. Guthrie, Vice President, was appointed President. Guthrie therefore immediately becomes Executive Officer of the company.

Mr. Adams has for many years been widely known in the stove business. He came to Newark in 1937, as Vice President and Works Manager of the Newark Stove Company, and in 1941 was elected President.

Mr. Guthrie came to Newark in 1928 as Foreman of the Enamel Division. In 1937 he was made General Superintendent, and 1942 he was made Vice President and Works Manager. He is a native of Richland County, Ohio.

Pressed Metal Institute adopts emblem

The adoption of an emblem for use in advertising and direct mail by members of the Pressed Metal Institute is announced by F. C. Greenhill, president. The new emblem, incorporating the slogan "Advance with

Stampings," is designed to coordinate individual company advertising in the interest of the Pressed Metal Institute. It is available to Institute members in a variety of sizes.

New arrivals

On August 17 a seven pound, six ounce son arrived at the home of Mr. and Mrs. R. C. (Bob) Douglas. His name is Robert Curran. Mr. Douglas is vice president and general manager of Clyde Porcelain Steel Corporation.

On September 14 a son, Wayne Woodrow II, arrived at the home of Mr. and Mrs. Wayne Phillips. Mr. Phillips is plant engineer at Clyde.

It is reported that Ralph Hamilton, formerly in charge of enameling at Crown Stove Works, Chicago, is now at the Effingham plant of Norge.

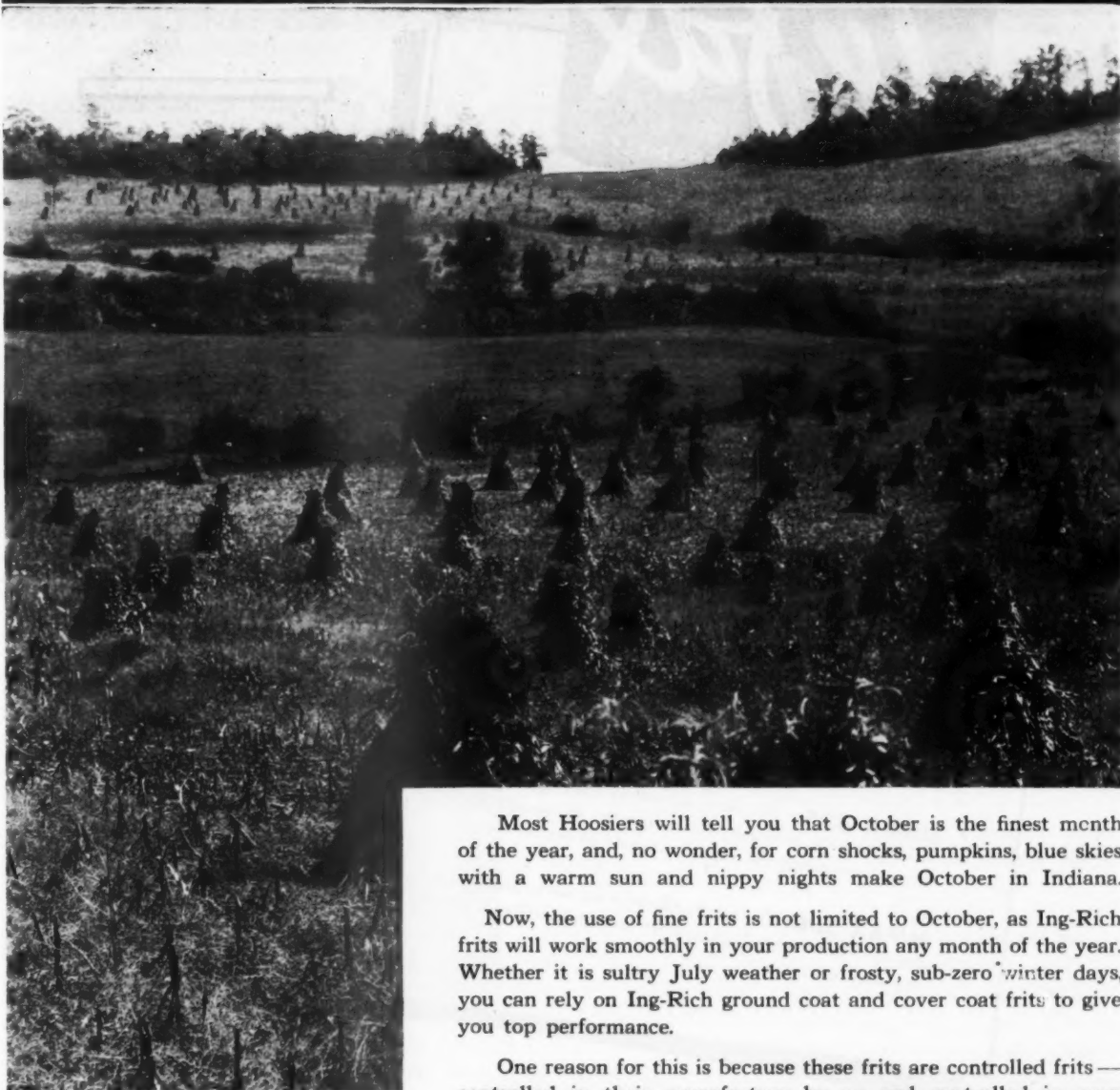
It is reported that Lyle Ardis, formerly of the Norge Muskegon plant is now located at the new Herrin, Illinois plant.

Bennett Chapple, Jr., is assistant to vice president — sales



Bennett S. Chapple, Jr., is now assistant to vice president — sales, United States Steel Corporation of Delaware, according to an announcement by David F. Austin, acting vice president. Chapple was formerly assistant manager of sales of the New York District office of Carnegie-Illinois Steel Corp., and from February 1, 1944 to his present appointment was

OCTOBER IN INDIANA



Most Hoosiers will tell you that October is the finest month of the year, and, no wonder, for corn shocks, pumpkins, blue skies with a warm sun and nippy nights make October in Indiana.

Now, the use of fine frits is not limited to October, as Ing-Rich frits will work smoothly in your production any month of the year. Whether it is sultry July weather or frosty, sub-zero winter days, you can rely on Ing-Rich ground coat and cover coat frits to give you top performance.

One reason for this is because these frits are controlled frits—controlled in their manufacture by us and controlled in your production through the qualities instilled in them by Ing-Rich.

Why not contact us now on your requirements—Remember, Ing-Rich frits are year around frits as well as October frits.



INGRAM-RICHARDSON MFG. CO.
OF INDIANA • INCORPORATED
FRANKFORT • INDIANA

A COMPLETE ENAMELING SERVICE



Proved Performance

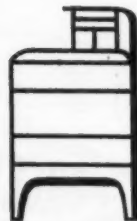
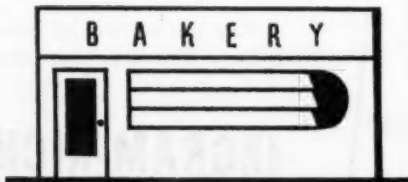
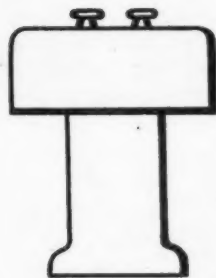
Enamels opacified with LUFAX zirconium compounds consistently prove their superiority...for every type of household and industrial application. The successful performance of these enamels results largely from the inherent advantages common to every type of LUFAX: improved resistance to thermal shock and chipping; better workability; truer, whiter color.

There is a LUFAX for every type of frit—antimony-free or antimony-bearing, regular or acid-resisting. To meet the requirements of various enamels, the following types of LUFAX have been developed, each with special advantages in its field of application:

LUFAX 20 A AND 20 B: Both have wide application. Most satisfactory for all-round application, to develop high opacity and gloss in porcelain enamels, including opaque, super opaque and antimony-free.

LUFAX 435: Develops extremely high opacity in both antimony and antimony-free enamels. Most effective for enamels requiring the highest opacity at lowest cost.

LUFAX 500: Especially effective for use in acid-resisting enamels to develop high opacity and gloss without sacrificing acid resistance.



LUFAX is a trade-mark, Reg. U. S. Pat. Off.

Represented by Cia. Rohm y Haas, Carlos Pellegrini 331, Buenos Aires, Argentina, and agents in principal South American cities.

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 3, P.A.

Manufacturers of Chemicals including Opacifiers Plastics Synthetic Insecticides Fungicides Enzymes Chemicals for the Leather Textile Rubber and other Industries



assistant to the president, Firth Sterling Steel Company.

Mr. Chapple began his career with American Rolling Mill Company in 1928, serving as assistant manager of sales development, and later as secretary and sales manager of the Insu-

lated Steel Construction Company, an Armco subsidiary. He joined Carnegie-Illinois in 1936 as manager of market development, and is known to many enamellers in connection with his work in this capacity.

further reconversion activity. Ed. Scharf, in charge of Hotpoint's enameling activity, wore a broad smile

All-porcelain electric ranges to sell "at or near" 1942 prices

Your reporter accepted an invitation from the officials at Edison General Electric Appliance Company to see the first of the company's post-war electric ranges come down the production line on Thursday, August 30. The news value of the occasion was evidenced by the presence of reporters and photographers from the metropolitan papers and major news services. Here is a production line, typical of scores within the appliance industries, starting to produce

assembly line, and oven doors fitted while hot.

Ranges all-porcelain

The first production included three models, carrying full pre-war bright finish trim on the deluxe model and other refinements on a moderate cost and a low-priced model. Of interest to the enameling industry is the fact that all models are "all porcelain" in the most literal sense. All substitute materials have been eliminated.



Mr. Scharf is pleased.

as he watched one-piece range bodies enter the continuous furnace.

Although production is only getting under way, the dipping, spraying and brushing lines at Edison's "pressurized" enameling plant had very much the appearance of normal pre-war activity.

If we consider this as typical of the country's many large, high production enameling plants, the housewife may soon expect to again find gleaming porcelain enameled household products on the dealers' floors.



G. L. Rees, Hotpoint's range and heater division manager, watches Jean Schaid remove a well-cooked ham from the oven of the first electric range to leave the production line.

FINISH PHOTO

peacetime products for the first time since civilian production was cut off by the war.

On hand for the great occasion were R. W. Turnbull, president; Ward R. Schafer, vice president; Gregory L. Rees, manager, range sales division; and other executives and key plant men.

As the first range came to the end of the assembly line, the oven door was opened to display a delicious looking baked ham (the guests who had luncheon at the Edison plant will testify that it *was* delicious). This was done to dramatize the fact that all ranges are heat tested on the

In referring to pricing policy, Mr. Rees said: "We are going to sell electric ranges at 1942 prices, even though costs are higher. Our aim is to reach production figures in 1946 that are greater than at any year in our history."

Enameling plant a busy spot

We took a trip through the plant to get some idea of how a manufacturer could be producing naval equipment on V-J Day and have electric ranges and water heaters moving down the production line on August 30. We found H. E. Kenitz, superintendent of the plant, checking up on

Chicago Vitreous praised for war work

The Chicago Vitreous Enamel Product Company, Cicero, Illinois, has been commended for the integral role it played as a partner in the Industry-Ordnance team.

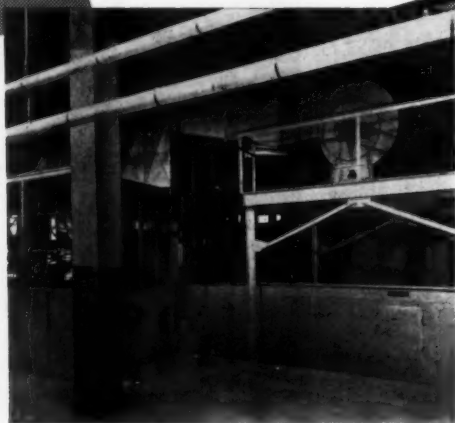
Chicago Vitreous, peacetime manufacturers of porcelain enamel frits, converted 100% to heat treating and fabrication of Armor Plate for Army tanks and other vehicles in late 1942.

The company made a notable contribution to the war effort by introducing a new method of hardening Armor, known as the "press quench." The report states that this invention was made available to Army Ordnance for use by other manufacturers.

In a letter from Brigadier General W. P. Boatwright, Commander of the

KOCH Dryers

**BOOST PRODUCTION...
CUT COSTS...
IMPROVE QUALITY**



**You CAN Get
GREATER
OUTPUT
at Lower Cost!**

KOCH Air Make-Up Room and Cable or Pin Conveyor Type Dryer

Installed in a large enameling plant, this KOCH Dryer, Spray Booth and Air Filtering System has stepped up output amazingly! Rejects due to dirt and dust have been virtually eliminated... greater safety and health protection gained... and an enormous saving in reclaimed frit has been realized.



Three 7-strand Cable Conveyor
Type KOCH DRYERS installed
in a southern enameling plant.

Do as many other live-wire manufacturers have done—"get set" to meet greater production demands with a dependable KOCH Conveyorized Drying System.

The proven accuracy of KOCH equipment assures uniform results every time... saves space, manpower and materials.

And the cost of installation and upkeep is probably less than you expect! Get the complete facts NOW, without obligation...

PHONE, WIRE or WRITE FOR INFORMATION

KOCH Also Builds All Types of Baking Ovens

KOCH Ovens, assembled from standardized units to the size you need to fit available space... equipped to meet your special requirements... can be installed in double-quick time, at low cost. Ask about them!



Ordinance Department, Chicago Vitrreous was cited for its part in the war effort.

Armco reports personnel transfers

A review of recent transfers of American Rolling Mill Company District Office personnel follows:

William A. Danner, former district manager of the Minneapolis office, is now assistant district manager of the larger territory covered by the Chicago office.

Franklin Wortley, formerly of the Chicago Office, has been transferred to Minneapolis as district manager.

H. H. Compson was transferred from Middletown to the Minneapolis office following his discharge from the Army.

J. W. Schofield, from the West Coast office in Berkeley, California, is now sales district manager at Kansas City.

Edson Dronberger, formerly manager of the Dayton sales district, is now assistant manager of the West Coast sales district, with headquarters at Berkeley.

Murray Wilson, former manager of the New York district, is now manager of the Dayton office.

W. B. Quail, formerly New York manager for Armco Railroad Sales Co., Inc., is manager of the New York sales district.

Florence's southern factory to build enameling plant

In the general revamping of its new "Marshall" factory at Lewisburg, Tennessee, Florence Stove Company plans a complete new enameling plant 300' long by 110' wide.

According to company spokesmen, the new enameling plant will be equipped with an electric continuous furnace, propane gas-fired dryers, automatic spray machines and water-washed spray booths.

Finish was pleased to receive a note from Commander Millard H. Pryor, U.S.N.R., now serving as special assistant to the manager, Manager's Office, P.S.N.Y., Bremerton, Washington. Earlier in the war Commander Pryor was for two years in the

Bureau of Ships, Washington, handling Navy facilities for the Shore Division of the Bureau.

American Stove introduces the cabinet manufacturers

Current magazine advertising of the American Stove Company featuring the "New Freedom" gas kitchen, as promoted by A.G.A., introduces a new note by naming the manufacturers of cabinets shown with the Magic Chef ranges in the attractive kitchens featured.

Through this method of cooperating with cabinet makers, the company believes it will help its retailers who are equipped to sell complete kitchen cabinet equipment along with Magic Chef ranges.

Cook to head kitchen equipment planning course at American Central

The appointment of Kenneth Cook as sales training manager of American Central Manufacturing Corporation, Connersville, Indiana, is announced by C. Fred Hastings, general sales manager of the company.

In his new responsibility, Cook will head up a course in kitchen equipment planning which American Central is preparing for its distributors and dealer representatives.

Prior to joining the American Central organization in 1940, he had served as business manager for the American Gas Service Company, Pittsburgh, Pa., and with the Sales Promotion and Market Research divisions of the Crosley Corporation, Cincinnati.

Dr. Harman to Locke Insulator

Dr. C. G. Harman, formerly Assistant Professor of Ceramic Engineering at the University of Illinois, has accepted a position as Ceramic Engineer with the Locke Insulator Company of Baltimore, Maryland.

Dr. Harman received his B.S., M.S., and Ph.D. degrees in Ceramic Engineering at the University of Illinois. He has held positions at the Standard Sanitary Manufacturing Company, Iowa Engineering Experiment Station and Department of Ce-

ramic Engineering, a cooperative project between the Illinois State Geological Survey and the Department of Ceramic Engineering, and has been on the staff of the Department of Ceramic Engineering at Illinois since 1936.

"E" award to Ellwood Company

The Ellwood Company, Ellwood City, Pa., producers of sanitary cast iron ware, was awarded the Army-

Navy "E" at special ceremonies held at the plant on September 12. The company has been engaged solely in war work for the past four years. The award was for their manufacture of forged end connectors for Army tanks.

Porcelain enameled utensils are made for fuel economy and cooler kitchens. The wide bottoms cover the heating unit — no fuel is lost.

Want better opacity at low cost?

Orefraction Zircon

A Zirconium Silicate of
MAXIMUM PURITY—MINIMUM CONTAMINATION

FOR ENAMELS AND GLAZES

Exclusive methods of preparation, patented equipment for separation and purification and petrographic and chemical controls assure you a trouble-free product.

Orefraction's new milling system produces a milled Zircon of exceedingly pure chemical analysis.

OREFRACTION RUTILE (HIGH TiO_2 Content)

Now Available for Ceramic Colorants

Prompt Deliveries Anywhere!



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Mobile grocery stores —

a new market for porcelain enamel ?

(Continued from Page 32)

washable surfaces will be a first consideration." They want a traveling store that will have "housewife appeal," both outside and inside, and are now engaged in carefully studying existing as well as projected materials. Anderson said: "Since we do not know for certain now what materials will be available, we can not make definite statements concerning materials we shall use for surfacing, but we want the best. As it looks now, most of the interiors will logically call for porcelain enamel." There was some talk of making the exterior surfaces of the truck in some form of plastic, but Anderson admitted that porcelain enamel would also be a good material and they are considering it.

A very interesting point is a possible later development in this distribution system. Store-to-Door have

definitely decided that when available they will distribute household appliances and equipment; refrigerators, freezing units, washing machines, and stoves as well as radios and possibly other appliances. Store-to-Door salesmen will take orders for these items while making their regular three-times-weekly neighborhood calls.

Five units to start

The enterprises plans to start out with five mobile units to work in the San Francisco Bay area residential districts, to be added to as development and demand warrant. They "expect that personnel will largely consist of present and former independent operators, men and women now employed in war work, and returning veterans."

The corporation is not incorporated under co-operative association laws,

but it is envisaged as a co-operative enterprise "insofar as cumulative benefits of buying in large quantities may be passed on to consumers; and through its distribution of profits to stockholders and owner-operators." All salesmen and other active employees will be co-owners in the business.

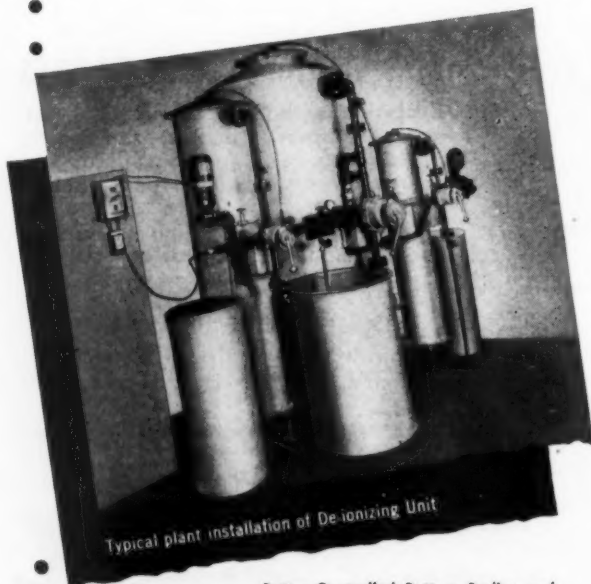
The company was incorporated last October under California law with authorized capital of \$5,000,000, divided into \$1,000,000 of common stock; \$3,000,000 of Employees' Special Issue Stock; and \$1,000,000 of Preferred Stock.

When the San Francisco branch of the enterprise is well established, a similar \$10,000,000 enterprise is planned along the same lines to be set up in Los Angeles. Probably through some sort of a franchise arrangement, eventually they expect the new system to become nationwide. They believe it will have its most successful initial development in residential areas of cities and towns, al-

to column 3, Page 50 →

Lower your rejects by making your enamels with

DE-IONIZED WATER



Typical plant installation of De-ionizing Unit

Better Controlled Pottery Bodies and Glazes: ILLCO-WAY De-ionized Water can help the potter control his body and glaze compositions.

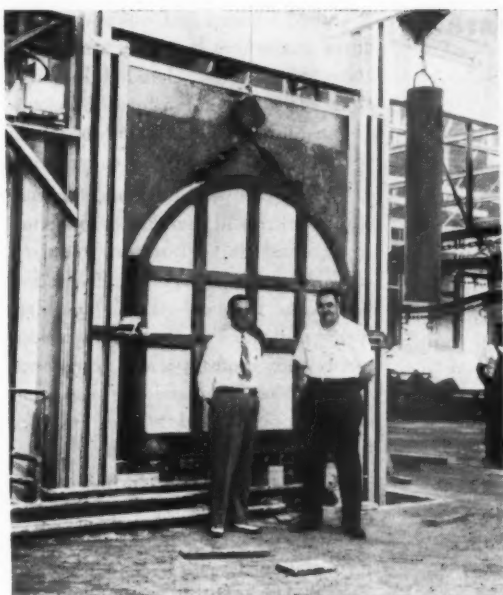
Reduction in rejects and elimination of copper heading have been obtained in leading ceramic plants when De-ionized Water was used in making the enamel. The varying acidic and basic reactions of natural waters affects the proper flocculation characteristics of frit and clay. Adjusting the enamel to make it function properly is costly as it requires materials and takes time.

You can assure yourself of a reliable water for enamel, by installing an ILLCO-WAY De-ionizing Unit. It will produce all the water your plant requires for capacity operation at a cost from 1% to 10% of that of distilled water. No fuel required, no cooling water. Maintenance is simple — no periodic dismantling for cleaning. Write for literature today!

Illinois Water Treatment Co., 866-10 Cedar St., Rockford, Ill.

Water Treatment Engineering





New furnace at Clyde Porcelain

This large capacity, gas-fired box type enameling furnace was recently installed in the plant of Clyde Porcelain Steel Corporation, Clyde, Ohio. It will furnish additional capacity to the company's already high production enameling plant. The furnace has a new type recuperator which will provide heat for a new dryer to be installed shortly. It is also equipped with a radiation pyrometer.

Standing at the furnace are Walter Pansky, works manager, and C. C. Cleghon, plant superintendent.

Dr. B. R. Teare, Jr., Head of the Department of Electrical Engineering of the Carnegie Institute of Technology, Pittsburgh 13, Pennsylvania.

Addition to Barrows organization

W. A. Barrows Porcelain Enamel Company announces the addition of Charles H. Scott to the organization. Mr. Scott (Scotty to architectural enamellers) has been interested in architectural porcelain enamel in his former connection as head of the steel building department of the Globe Wernicke Company.

This addition to the Barrows organization would seem to indicate continued strong interest in the architectural field.

The Keystone Grey-Iron Foundry Company, Pottstown, Pa., has recently completed a new core room for added plant capacity.

Noble returns to Ferro

The Ferro Enamel Corporation, Cleveland, Ohio, announces the return to its ranks of Captain William N. Noble. He was mustered out of the U.S. Army last month.

Captain Noble was Administrative Officer of the Cleveland (Ohio) area of the Pittsburgh Chemical Warfare Procurement District. He entered the service in 1943 as a Second Lieutenant and was promoted to Captain last year.

He returns to his position at Ferro as assistant to Louis B. Hart, manager of the Frit Division. "Bill" is well-known throughout the porcelain enameling industry.

Instrument educational conference

An educational conference on instrumentation sponsored by the Carnegie Institute of Technology and The Instrument Society of America has been arranged for October 16, 17 and 18, 1945.

The program will be divided into two parts. The first part covers the requirements expected by industries and the second part will be devoted to present training in instrumentation.

The Chairman of the Committee is

to Col. 3 →

Prepare a full course meal in six minutes

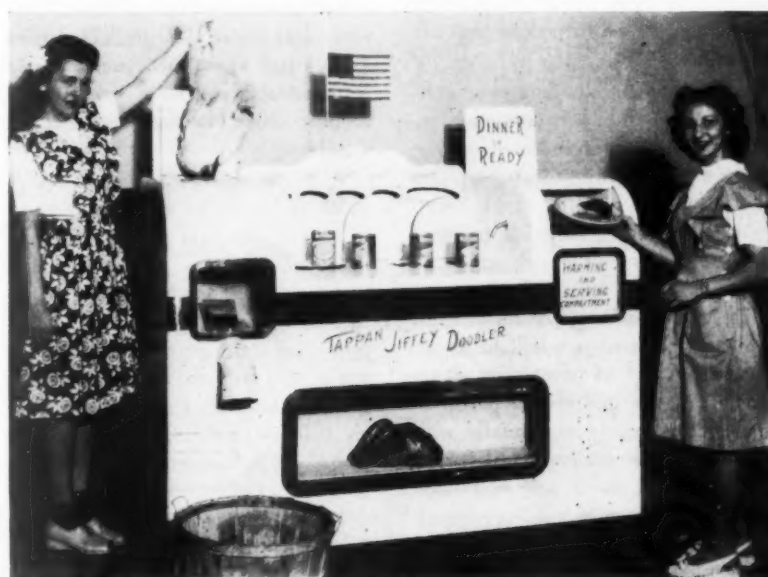
If your wife is one of the many who has been dreaming of the day when she can play bridge all afternoon and come home and prepare a full course dinner in six minutes, the "Jiffy Doodler" is the answer.

It's John G. Hoff, chief engineer of Tappan Stove Company, who offers this answer to the housewife's dream.

A live chicken is put in a compartment where it is automatically cleaned and dressed before starting its journey on the conveyor line

where it is given a special heat treatment for fast cooking. While it is going down the conveyor line, the housewife can toss unopened cans into different compartments, where, under a special process, the vegetables are cooked and are ready to be served at the same time with the domestic fowl. Autocalls and sirens herald the completion of each operation.

Hoff points out that there is only one hitch. This range will not be available for at least 50 years.



Characteristics of the building construction market

(Continued from Page 26)

is unlikely that building code officials will be inclined to revise present restrictive regulations. These, as long as they remain in force, will be a detriment to the market for porcelain enamel. Too many kinds of attachments, and too many methods of installation, can only serve to decrease the interest of the architectural profession in porcelain enamel and to increase the difficulties of promoting building ordinances favorable to its use. On the other hand, one universally approved attachment, and one standard method of installation, should help to encourage the use of porcelain enamel and, at the same time, make it less difficult to obtain necessary building ordinance revisions.

Summary

These, then, are some of the conditions which will affect the postwar market for architectural porcelain enamel. Favorable conditions have been presented with due regard for the dangers of over optimism and no attempt has been made to minimize those that are unfavorable. All conditions have been described as objectively and as factually as possible. Since these conditions will have a vital bearing on the future success of the market, it might be well to summarize them before considering how they can be turned to best advantage:

1. This potentially enormous market in the building construction industry holds unprecedented opportunities for architectural porcelain enamel. Also, it holds equal opportunities for other kinds of building materials, some of which are in a better position, financially, to force a demand than is porcelain enamel. However, if there is a will to do so, there is a way to offset this advantage of money and enable porcelain enamel to compete successfully with other materials such as glass, aluminum, pressed wood, and synthetics.

2. To realize in full the opportunities this future building construction market holds for porcelain enamel, an

effective demand must first be created. In this discussion the position is taken that it does not exist today in sufficient volume to meet the objectives of growth, permanence and profit of the industry.

3. Building an ever-increasing demand for architectural porcelain enamel should not be too difficult a job to undertake since the group which dominates the building construction market—architects and their associates—is relatively small, uniform and compact.

4. To do an effective job of reaching this all important man-market group requires recognition of the fact that architects have a considerably above-average educational and cultural background and that they must combine art, professionalism and business simultaneously in their work.

5. Architects tend to select materials and equipment they know are approved by the profession as a whole in preference to products that have not acquired such general acceptance. This is a natural outgrowth of the need to remove, insofar as possible, the element of risk to their professional reputations.

6. Evidence indicates that, from the artistic standpoint, porcelain enamel is not regarded by architects as a medium of great design value. This erroneous impression probably arises from a lack of sufficient and accurate information, and from existing examples which do not meet esthetic standards.

7. From the professional standpoint architects today seem inclined to regard porcelain enamel as a material of amateurs used principally to rejuvenate store fronts, and to direct attention to gasoline filling stations and quick lunch stands. Here again, this attitude derives, not from the few fine examples of porcelain enamel installations, but from the many which, unfortunately, are not so fine.

8. As businessmen, architects must know the limitations as well as the advantages of porcelain enamel; how

it should be used and why; what uniform guarantees it carries and where they can get full, detailed information. They cannot afford to take a chance on a material that forces them to substitute guesswork for certainty.

9. The postwar building construction market will demand a reduction in the time and effort now required in designing, specifying and erecting porcelain enamel. These requirements indicate a need for the development and industry-wide acceptance of a series of standard sizes and shapes which can be carried in stock for quick supply on demand.

10. It appears that, in order completely to satisfy these requirements, the industry also should adopt uniform standards with respect to attachment and installation methods. These would serve good purpose in obtaining building code revisions.

11. Finally, the unprecedented opportunities for architectural porcelain enamel the future market holds, together with the attitudes and buying preferences of the man-market group that controls it, indicate an urgent need for cooperation and joint action on certain matters of product development, sales promotion and advertising.

→ from Page 48

MOBILE GROCERY STORES—

though country districts are to be considered in eventual expansion.

Since purchasers through this set-up will be "assured of getting fresh, untainted, sanitary foods at no more cost to the housewife than when she pays cash for her supplies and carries them home herself," Ricconi believes it will get rapid acceptance; also that it will provide present food store operators with easier working conditions, shorter hours, at least equal remuneration, and a lifelong vocational connection through co-ownership.

The project seems to offer some interesting opportunities and challenges to the porcelain enamel industry.

Peaches, oranges, tomatoes and other acid fruits are best cooked or heated in porcelain enameled ware.

VITREOUS ENAMELING

simplified in production
and *reduced* in cost by this

new

Titanium Steel

ADVANTAGES

THE use of Titanium steel offers the listed advantages to the Vitreous Enamel Industry. These advantages have been proved in laboratory and plant operation where the recommended practice covering nickel flashing, pickling and enameling has been followed:

1. Elimination of enamel boiling due to steel defects.
2. Elimination of conventional ground coat.
3. Elimination of copper heading.
4. Improved sag resistance.
5. Improved resistance to warping.
6. Excellent deep drawing qualities.

7. Use of conventional cover coats directly on metal.

8. Resistance to hydrogen penetration or absorption.

The benefits you derive from these advantages are: Lighter enamel weights and coats...reduction of chippage and mechanical breakage losses...increase in production efficiency through reduction of re-work and re-operation...sharply improved thermal shock resistance of

white enamel, due to thinner enamel thickness...overall cost reduction for enameled ware...increase in production speed. Even when a ground coat is used this NEW Titanium Steel for Vitreous Enameling brings important manufacturing cost reductions.

Manufacturers of both steel and enameled products may obtain complete factual technical data from a member of our Technical Staff, or by mail. Consult your steel supplier on deliveries.



Pending patent applications on the new enameling process and product made thereby are owned jointly by Inland Steel Company and The Titanium Alloy Manufacturing Company under Trust Agreement.

THE TITANIUM ALLOY MANUFACTURING COMPANY

Executive Offices: 111 BROADWAY, NEW YORK, N. Y.

General Offices and Works: NIAGARA FALLS, N. Y.

We BUILT a plant on a drawing board

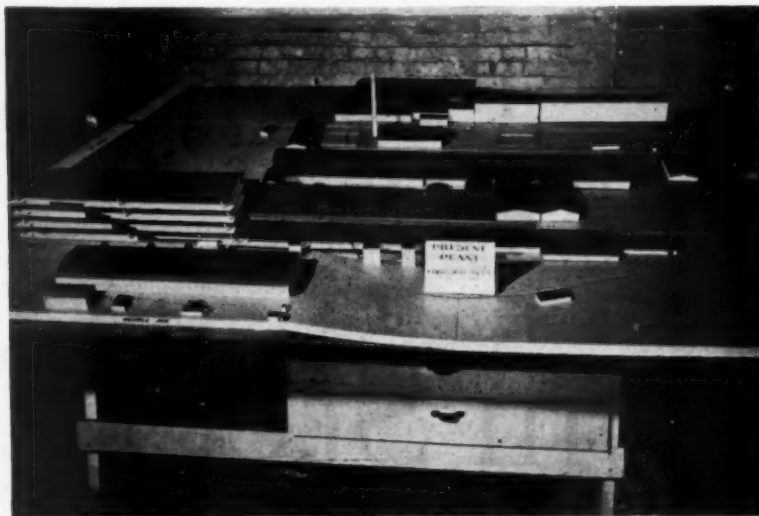
(Continued from Page 16)

ware from green storage and weld shop to the enamel shop. The overall length of this shop chain is approximately 2,000 feet.

We will normally carry from 1½ to 3 days' supply of enamel ware ahead of the assembly conveyor. This

All sub-assemblies will be made at the side of the main assembly conveyor adjacent to the station at which the sub-assembly is used in the main assembly.

The heating and ventilating of the assembly department will be modi-



Here's the model plant — "drawing board" and all.

stock is held at a minimum to prevent excessive handling, which causes scrap and reoperations reflecting high cost.

Assembly department

The major items of materials used as loose parts along the conveyors will be handled from the store room on a traveling palletized conveyor chain. A complete set of parts for one stove (exclusive of hardware and some miscellaneous items which can not be conveniently handled by this method) will travel overhead the floor assembly conveyor, materials being arranged on the pallets as they are required in the assembly operation as the stove progresses along the main conveyor.

We will have two conveyor lines, each approximately 325' long, with the first operation on the conveyor being the assembly of the crate bottom to the stove chassis and the final operation nailing up the crate and adding the necessary stickers.

fied, and all new lighting will be provided to insure ideal working conditions for our employees.

Warehouse

The crated stoves leaving the ends of the two assembly conveyors will converge onto a single conveyor which will carry them into our four-story warehouse, automatically unloaded at their proper floors. They will be stacked with an electric tug designed and built for this particular operation. Stoves to be shipped from warehouse storage will be removed from the piles by the same electric tug, placed on a similar automatic conveying system and conveyed to the loading dock for placing in cars.

In many instances stoves which are being assembled on the conveyor lines will be shipped immediately. These units will be carried directly to the loading dock on a secondary conveyor.

There are many minute details of operations in our revamped plant

which we have not attempted to describe since space would not permit. However, through the use of the miniature plant we have covered the highlights which are most important and have planned an ideal setup in which we can manufacture a product that will be a credit to our company and its employees.

Radiation pyrometry control in enameling

(Continued from Page 21)

erator that the batch should be removed.

"Burners no longer consider the time factor in pulling heats, although these factors are never wholly ignored. Nor does it mean that production can be speeded beyond the necessary processing time. A control procedure was set up to provide a reasonable limit for burning time. The limit is controlled by adjustment of furnace temperature through automatic control."

Further inquiry indicated that metal distortion may be eliminated, except when caused by fabrication or design. Oxide manufacturers, pointing out that many variations in color were due to temperature variations, said their major problems had been solved through use of radiation pyrometry.

In another checkup it was found that good control and uniformity were experienced in *continuous furnaces* as well as with job shop ware in batch furnaces. In continuous processing the head of pyrometer is focused on the passing ware and the furnace temperature controlled directly from the ware.

Other advantages obtained from use of the radiation pyrometer was that a stepup in burning quality increased the quality of other operations. Operators working on good ware tried to make their work better. Rejects and re-workings were reduced. Before installation of radiation pyrometers, day and night floor foremen reported 75 per cent of their time was spent in checking operations. Now checking of firing operations can be largely eliminated.



TAILOR-MADE COLORS FOR YOU

Color matching is a job you can rely on Drakenfeld to do promptly and with exactness, for tailor-making colors is a specialty with our technologists. *Accurate formulation* means colors fitted to whatever frits are required in your porcelain enamel production schedules. It assures you of dependable color strength and tops in uniformity. All in all, it means that Drakenfeld offers you reliable color service that helps save time, minimize rejects and increase profits.

Whether you are producing porcelain enamel for signs or table tops, for architectural or industrial purposes, for home or professional utensils and appliances, your request for help in matching colors will be met with all the "know how" we have gained in solving thousands of color problems these many years. Although some colors are not available right now, it will be well worth your while to become acquainted with Drakenfeld service. Let us know your problem. Write today.

DEPENDABLE SERVICE ON: Screening Paste . . .
Graining Colors . . . Squeegee Oils and Mediums
. . . Spraying and Banding Mediums . . . Chemicals . . .
Rotospray Sifters . . . Porcelain Grinding Balls . . . Porcelain Mill Linings . . . Steveco Mills.

If it Flows ROTOSPRAY Can Strain It!

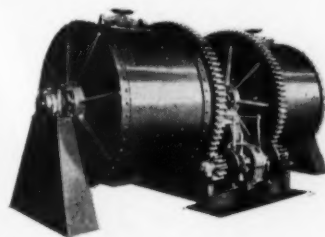
Saves time and labor. Strains through a vertical screen — no clogging. Long-life screen often saves enough to pay for the equipment. Standard and Junior sizes. May be suspended or placed on floor. Capacity ranges from 300 to 1,000 gallons per hour, depending on the nature and specific gravity of the product, screen mesh and size of sifter. Descriptive folder sent on request.



5 SAVINGS WITH STEVECO MILLS

Time
Labor
Horsepower
Floor Space
Initial Costs

Steveco high-efficiency duplex mills wet-grind porcelain enamel materials better, faster and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.



YOUR PARTNER IN SOLVING COLOR PROBLEMS

Drakenfeld

B. F. DRAKENFELD & CO., INC.

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Factory and Laboratories: Washington, Pa.

Pacific Coast Agents:

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THE RESPONSIBILITY



BILITY OF

LEADERSHIP

If a man makes a better product—if he prices it right—if he adds service to these factors in a degree greater than that of his neighbors—then he will some day become a leader and his responsibilities will increase many, many times.

His "troubles," too, will multiply for it is but human nature to expect more of the man at the top than of the rank and file.

From the time PEMCO produced the first commercially marketable porcelain enamel frit in the United States its industry role has been that of "Leadership."

Not in the physical sense of size alone nor perhaps in quantity production; but by inventive genius—by the quality of its materials—by solving tomorrow's problems today, it has added to the progress of the industry in a manner above comparison—it has earned and learned the RESPONSIBILITY OF LEADERSHIP.

From the nebulous stage of your planning to the production of the finished product that willingness to serve which carried Pemco to the top is yours for the asking.

PEMCO CORPORATION
BALTIMORE  **MARYLAND**

"ALWAYS BEGIN WITH A GOOD FINISH"